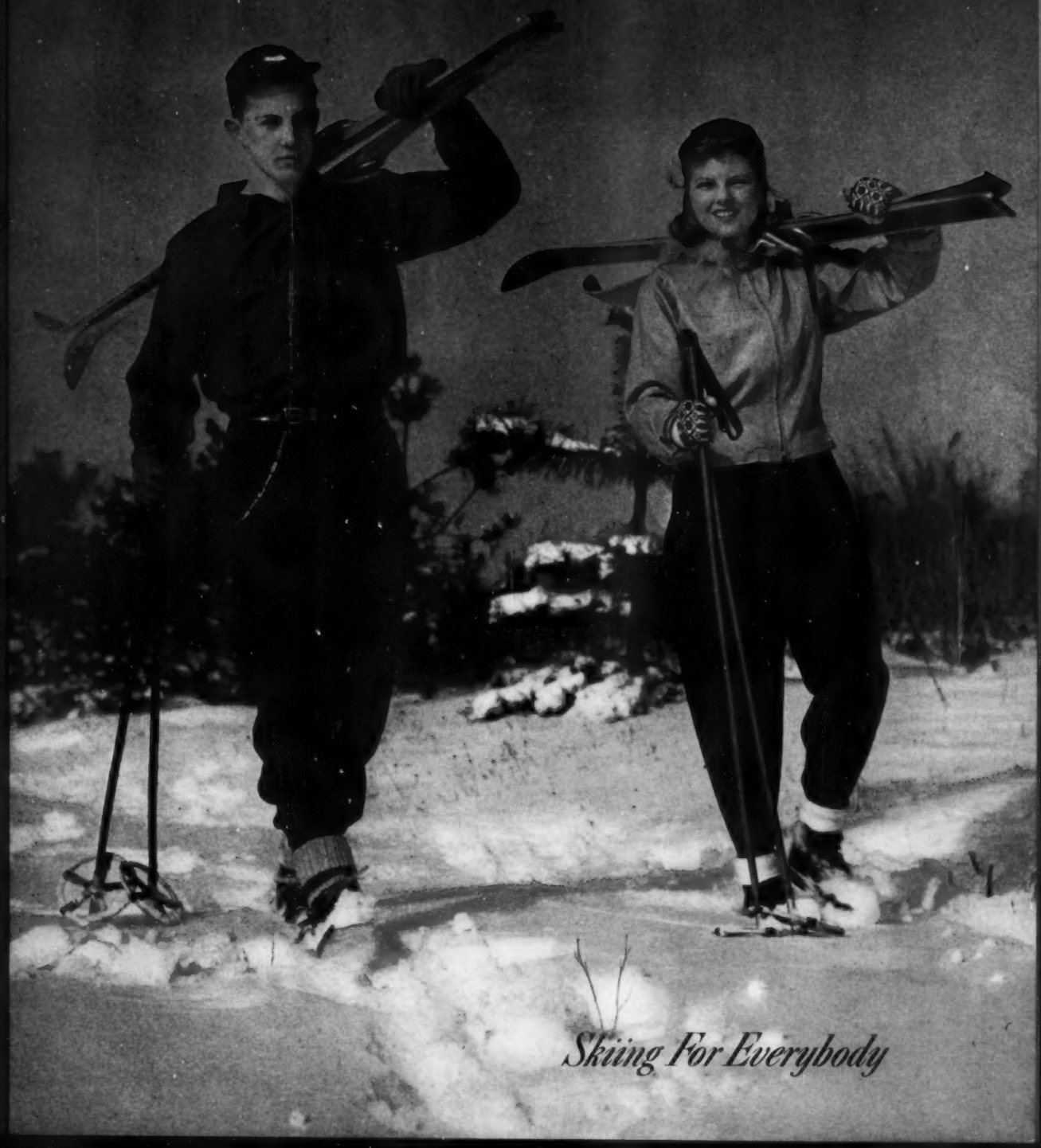
AMERICAN

FORESTS

JANUARY 1940 30 CENTS



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Roy A. Ferguson
PRESIDENT

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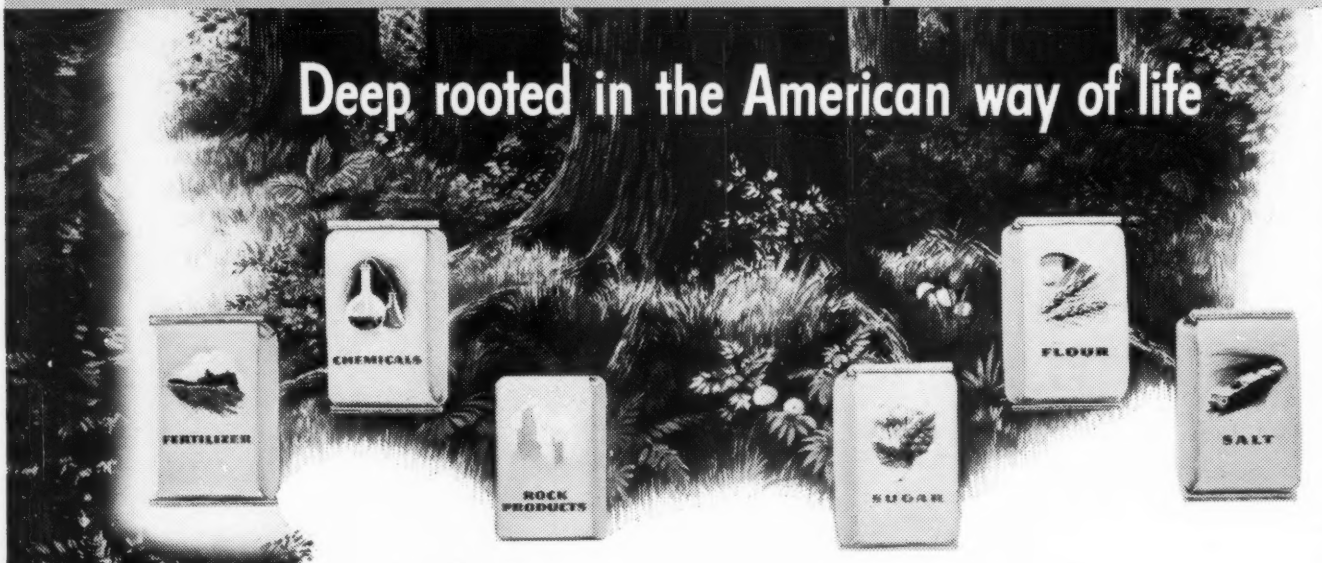

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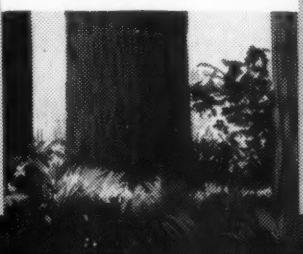

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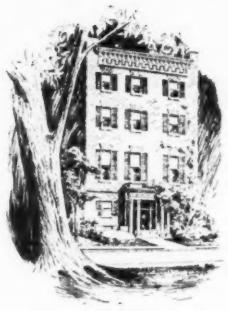

THE ASSOCIATION

The American Forestry Association is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and the part they play in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

AMERICAN FORESTS

PUBLISHED BY THE AMERICAN FORESTRY ASSOCIATION

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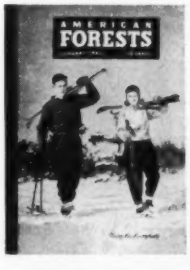
VOL. 55 NO. 1 **JANUARY, 1949**

Contents



THE COVER

When Photographer Harold M. Lambert of Philadelphia, resolved to make a ski picture he assembled the trappings of his trade and headed for the wide open spaces. At length the Lambert expedition reached Montgomery County in suburban Philadelphia. Here he snagged Phil and Mary Berkes and the result is the January cover of AMERICAN FORESTS. Philadelphia's slopes are as good as its scrapple Lambert the Loyal contends. And it must be admitted his picture gives his argument some weight.

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NOTICE OF CHANGE OF ADDRESS should be received by the tenth of the month preceding issue.

LETTERS TO THE EDITOR

How to Make Wood Last Longer

On page 482 of the November issue, C. E. Howell asks "Why not make timber products last longer?" All a wood user has to do is to order his wood products given a preservative treatment. The extra cost is well worth it.

Coal tar creosote is the oldest preservative and has been in use for more than 100 years. Its objectionable odor, inflammability and its smeariness has caused chemists to search for as good a preservative as creosote and yet without its objections. A number of proprietary compounds have been patented. The one I have found best was developed in the laboratories of the University of California and now bears the trade name of Chemonite. Three western plants are licensed to use it and eventually it should be available in the East. Fence posts treated with it twenty-one years ago are still as good as new.

Mr. Howell and others interested should understand that no preservative, however good, is effective unless it is injected into the wood under pressure. This is possible only at a specially set up plant. Painting or dipping the wood is waste of materials and time.

Preservative treatment, if more generally adopted, would add enormously to our wood supplies.

Emanuel Fritz
School of Forestry
University of California
Berkeley, California

Fireproof Cigarette

It is interesting to note that the timber salvage worker on page 494 of the November issue (upper left) has a cigarette in his mouth. Then on page 494, same issue, cigarette-proof furniture is described. What the world needs is a fireproof cigarette.

Dan Patch
Boston, Massachusetts

Honey for the Bees

In the October issue of your magazine (the first issue I have ever read) there is an article on honey hunting by Harry Botsford that disturbs me. It is seemingly a very interesting and clean sport up to one point, and that is where the bees have been robbed of their last ounce of honey, apparently, and left without food possibly at a time of year when there are no more flowers from which to obtain more. Mr. Botsford does not explain that in his article.

From my meager understanding of beekeeping I believe it is customary, when harvesting honey, to leave sufficient supply of honey in the hive to serve as food for bees to tide them over to another blossoming time; otherwise they may starve. I believe it is contrary to the principles of wildlife conservation to destroy a wild beehive to such an extent that they may be left to starve. All bees are a great essential to pollination. I think the readers of your magazine should be set right in that respect in connection with this very article on honey hunting.

Clarence S. Millius
Santa Monica, California

Bees are scarce enough in Midwest clover fields without the aid of town and city, also rural, hunters. Why the promoting article "Honey Hunting" in the October issue?

Grace M. Mason
Bartlett, Illinois

On Conservation's Great Need

Your October editorial "Conservation's Great Need" is fine. An overall program is needed. Yet I cannot help but recall that ten years ago—foresters and conservationists, you among them, defeated President Roosevelt's proposal for a federal conservation department because of personal bias.

Think what it would mean to have such a department now! Perhaps a great conservationist would be at the head of it. Social idealists and pig farmers have headed the Department of Agriculture. Forestry has been a sideline. Think what a fighting Ickes could do if you would join him instead of frustrating him. High-sounding words and low-level action sold true conservation down the river. Now that November 2 is behind us, I hope for more objective leadership from those who set themselves up as spokesmen for conservation.

Your solution, better public relations, has merit. But no amount of public relations can displace greed with altruism. The free enterprise system as a solution is a laugh. Free enterprise as we have had it is what brought on the present crisis. If wasteful exploitation is not to continue we must achieve some solution such as the European countries have adopted—Sweden, Norway, Germany, France, Finland, etc. Communism and capitalism are the great wasters. The middle way is the saving way. When will leadership with the courage to recognize this fact arise?

Everett Gesouen
Sacramento, California

WANTED!

1948 Issues of American Forests

It's mighty nice to have so many new members in the Association. Frankly we weren't prepared, and as a result our circulation staff can't supply the additional magazine requests.

Can you supply us with 1948 issues of January, July, August or September? If so please mail them to The American Forestry Association, 919 17th St., N. W., Washington 6, D. C.

Well, Mr. Oliver!

E. V. Oliver in his "Plea for Weeds" (Letters to the Editor), November issue, has a few good ideas but I do not like to see his letter go unchallenged. Before he categorically condemns all "so-called chemical fertilizers," Mr. Oliver should acquaint himself with certain soils in Montana so low in phosphorus that not only do plants grow poorly on them but livestock eating such plants become sick. Or some soils of Florida on which plants will not grow until supplied with an *outside* source of manganese. Or some of the soils of Maine that require potash to grow potatoes. Or some virgin soils of Australia that will grow practically no plant life until supplied with an outside source of copper or zinc or both. Suitable applications of chemical fertilizers have corrected these conditions. Hundreds of such examples could be cited.

Where does Mr. Oliver get the idea that chemical fertilizers kill off soil bacteria or earthworms? I would like for him to show me more earthworms in his garden than I have in mine, and I use about five pounds of the "so-called chemical fertilizer" on every 100 square feet every year. This amounts to about a ton an acre. It makes lush garden growth and lusty earthworm growth. Of course I leave the plant residue there. I have more such residue than others that do not use the chemical fertilizer.

I wonder where Mr. Oliver would get his food if no insecticides or

fungicides were used and insects and diseases were permitted to take all the crops.

Ray A. Pendleton
Corvallis, Oregon

Douglas fir *vs* Douglasfir

In the September issue I note that Douglas fir is spelled Douglasfir in many instances and I question the authority for such usage. If Douglasfir—why not grandfir, engelmannspruce, pacificyew? The thing is absurd.

J. B. Alexander
Vancouver, B. C.

The authority for scientific and common names of trees in AMERICAN FORESTS is *Standardized Plant Names*, issued by the American Joint Committee on Horticultural Nomenclature. Douglasfir *(Pseudotsuga taxifolia)* is used as one word because it is not a true fir. Still something of a botanical puzzle, it bears strong resemblance to spruce and fir as well as to the hemlock and yew. Grand fir *(Abies grandis)*, on the other hand, is a true fir.—*Editor.*

Maybe He Gets Around

On page 120 of the March 1938 issue of AMERICAN FORESTS, in an article about Connecticut, an old logger is pictured going to work. In the November 1948 issue, on page 492, the same man is pictured—this time in a Maine article. And he is wearing the same mittens.

And what in the world is he looking at? Send him over to Ohio; we can put him to work.

C. M. Moore
Akron, Ohio

For Softer Water

A housewife who has been obliged to put up with hard water washing for the last few months, I thoroughly approve the whim of iron displayed by the tough-fibered maiden lady described in "Dorothy Canfield's Forest" in your December issue, who laid down the condition that the members of her pioneer party must settle where the water was soft. She knew what she was doing. Personally, I've had no such luck. I've tried everything described on the radio and all I get is chapped hands. Yours for softer water.

Mrs. John Anderson
Jonesboro, Michigan

Close Up the Gap

After reading I. T. Haig's "Putting Research To Work" in the December issue and the picture-story "A Farm Forester At Work" in the September issue I've decided there is a big gap between what forestry experts know and what is actually being done about it. To my mind, the answer is more farm foresters. The tremendous amount of good being accomplished by a relative handful of these on-the-ground forestry salesmen clearly indicates what could be done if what amounts to a company could be built up to the strength of a division. Let's recruit more farm foresters for one of the most worthwhile tasks facing our country today.

Robert I. Samuelson
Pittsburgh, Pennsylvania

Report from Dr. Schenck

I am now in the small hamlet of Lindenfels in the Odenwald, though my soul, awake and asleep, continues to march through the blessed USA. I have maintained by a huge correspondence my contacts with my American friends and with American forestry. Just now, at the request of the American Forest Products History Foundation, I am describing the development of American Forestry from 1895 on. Some 300 pages of this opus are done.

Simultaneously, in a desire to instil with the children of the USA a love and a respect for the ordinary tree, I am engaged in writing a *First Reader* on the miraculousness and the godliness of the common trees. If anybody knows an invention more wonderful than the small seed giving rise automatically to a Giant Sequoia, let him stand up and show it! As chemical factories and as water pumping works, the trees are unequalled. It is botany of this sort that I am anxious to illustrate—and I hope to live long enough to complete my study and my primer.

Dr. C. A. Schenck
Lindenfels, Germany

(Dr. Carl Alwin Schenck organized the Biltmore Forest School in North Carolina, the first school in this country devoted exclusively to the teaching of technical forestry [see Biltmore Days" by John B. Woods, in the October 1948, issue of *American Forests*].—*Editor.)*

They'll Show You How, Too

It occurred to me as I read Nort Baser's article, "Fire Control—Citizen Style," in the December issue, that scores of communities in these United States might well profit from an organization similar to the one in Palestine, Texas. Mention was made of a bulletin which describes this organization fully. Whom could I write to get this information?

C. M. Pfeifler
Joplin, Missouri

(The Chamber of Commerce, Palestine, Texas, will be glad to send you the bulletin mentioned. In fact, a postcard addressed to Forest Fire Brigade in that little city would be certain to fall into the hands of someone who would be glad to comply with your request.—*Editor.*)

A Tree That Honors Washington

I am sure you will be interested to know that a marker will soon be placed near the walnut tree in Hammond (Louisiana) planted in 1932 by the Hammond Garden Society to commemorate the 200th anniversary of George Washington's birth. This planting was a part of the National Nut Tree Planting Project, sponsored by The American Forestry Association, the U. S. Department of Agriculture, the Boy Scouts of America, and the American Walnut Manufacturers' Association. The tree grew from a nut gathered from a large walnut tree at Mount Vernon.

The purpose of the marker is to inform visitors to Hammond of the tree's history. It is also planned to surround the tree with a chain-draped fence. And we propose to hold appropriate ceremonies each year at the site of the tree on the anniversary of the birth of the Father of our Country.

Mrs. Edward Richardson
Hammond, Louisiana

COMMEND BANKERS

In recognition of public education in better forest management, directed particularly to the owners of small woodland properties, undertaken by certain banks in rural areas and in the Federal Reserve System, the 67th Annual Meeting of The American Forestry Association, held in Chattanooga, Tennessee, in October, adopted a resolution commending "the several state banking associations, the American Bankers Association, and the Federal Reserve Banks for their progressive attitude and urges increased effort and attention to this important project."

BOOKS PUBLISHED AND RECOMMENDED

BY THE AMERICAN FORESTRY ASSOCIATION

Knowing Your Trees

By Collingwood and Brush

THIS edition includes 150 important American trees. This beautiful and informative book is now more graphically illustrated than ever before. More than 800 illustrations include actual photographs of each tree, its leaf, bark, flower and fruit, along with complete descriptions of its range, habits, uses and identifying characteristics.

KNOWING YOUR TREES is just the book you have been waiting for. Designed for reading convenience, it is also beautifully printed, with colorful cover and dust jacket. Clothbound, size 12 x 8¾", 312 pages. **PRICE $5.00**

American Conservation

By Butler

AMERICAN CONSERVATION is the story of America—its land, its resources, its people. Beginning with the story of the ages, AMERICAN CONSERVATION presents for your knowledge and enjoyment the complete story of the conservation of the organic natural resources of our country. Briefly told, with more than 200 graphic illustrations, it is a story which will appeal to young and old alike. It is a story every American should read—and understand. Clothbound, size 12 x 8¾", 160 pages. **PRICE $2.50**

Teaching Conservation

By Beard

DESIGNED especially to provide teachers with the basic understandings for effective teaching of conservation in the school, this book sets forth (1) a proper concept of conservation by use of certain facts about natural resources and (2) the educational principles to be followed in using natural resource information to give students an understanding of conservation. Illustrated, 144 pages. **PRICE $1.50**

Managing Small Woodlands

By A. Koroleff with the Collaboration of J. A. Fitzwater

HERE is a practical, simply written handbook for the profitable use of forest land. If you own, manage, or plan to acquire forest property you should have a copy of MANAGING SMALL WOODLANDS—the guidebook to woodland improvement and harvesting. Learn how to make your woodland pay cash dividends year after year.

The authors, A. Koroleff, Director of Woodlands Research, Pulp and Paper Research Institute of Canada, and J. A. Fitzwater, formerly chief of the division of state forestry, U. S. Forest Service, have spent many years in woodland management work. They are recognized authorities in this field.
PRICE $1.00

Trees Every Boy and Girl Should Know

By Fader

THIS book of strip drawings by Calvin Fader, pictures 38 hardwoods, 38 evergreens, and in addition, 23 famous American trees, such as the Cambridge Elm, the Charter Oak, the oldest tree, the Nation's Chrismas Tree, etc. Your boy or girl will thoroughly enjoy this interesting book of popular drawings. Pocket size 3 x 8½". **PRICE 50c**

ALSO, Forest Resources of the Douglas Fir Region $1.00
Report on Supply and Production of Wood Poles in the U. S. 40c
Trees of The District of Columbia 35c
How to Plan A Memorial Forest 10c

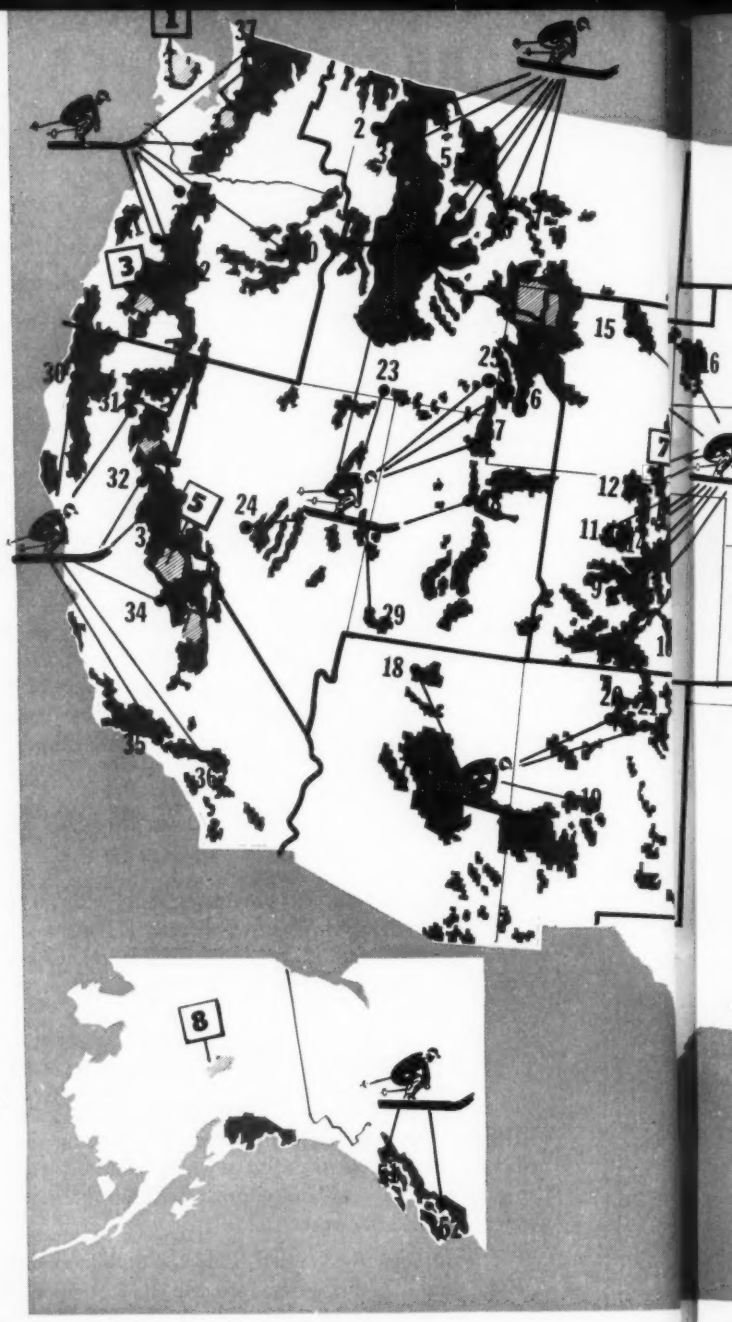
Order From

THE AMERICAN FORESTRY ASSOCIATION
919 17TH STREET, N. W. WASHINGTON 6, D. C.

Skiing For Everybody

By JAMES B. CRAIG

If you have the bug—and millions have—Uncle Sam has a slope for you



Harold M. Lambert

MILLIONS of outdoor-loving Americans who have discovered that skiing is a whale of a lot of fun are giving forestry a new twist on national forests in the nation's snow belt.

Time was when rangers cut down on their staffs and moved out of the woods when the first snow flurries came swirling through the trees. That has been changed. Today they dig out their winter togs and join their crews in their new role of shepherding flocks of skiers.

Last year upwards of two and three-fourths million Americans flocked to the 236 areas that comprise the winter sports network on the national forests—much more than the 1947 record. Another quarter of a million visitors, not all of them skiers, turned up at the seven major centers in national parks.

The white serenity that once enfolded national forests and parks in unbroken blankets of snow has been shattered

No.	AREA	FOREST
1	Elkhorn	Beaverhead
2	Lookout	Coeur d'Alene
3	St. Joe	St. Joe
4	Silver Lake	Deerlodge
5	Big Mt.	Flathead
6	MacDonald	Helena
7	Kings Hill	Lewis & Clark
8	Wolf Creek	Rio Grande
9	Pioneer	Gunnison
10	Cooper Hill	San Isabel
11	Aspen	White River
12	Glen Cove	Pike
13	Berthoud, Winter Park	Arapaho
14	Rabbit Ears	Routt
15	Medicine Wheel	Bighorn
16	Terry Peak	Black Hills
17	Snow Bowl	Coconino
18	Williams	Kaibab
19	La Madera	Cibola
20	Big Tesuque	Santa Fe
21	Santa Fe	Santa Fe
22	Sun Valley	Sawtooth
23	Magic Mt.	Minidoka
24	Toiyabe	Toiyabe
25	Snow Basin	Cache
26	Snow King	Teton
27	Alta, Brighton	Wasatch
28	Kolob, Daniels	Uinta
29	Cedar Canyon	Dixie
30	Snowmen's Hill	Shasta
31	Mineral	Lassen
32	Sugar Bowl, Donner	Tahoe
33	Pinecrest	Stanislaus
34	Shaver Lake	Sierra
35	Big Pines, Snow Crest, Mt. Waterman	Angeles
36	Snow Valley	San Bernadino
37	Heather Meadows	Baker
38	Stevens	Wenatche
39	Timberline	Mt. Hood
40	Anthony Lakes	Whitman
41	Hoodoo Bowl	Willamette
42	Tumalo	Deschutes
43	Cannon, Black, Bear Mts.	White Mtn.
44	Bramley, Widows Clearing	Green Mountain
45	Water Mill	Allegheny
46	Shingobee	Chippewa
47	Parkinstown	Chequamegon
48	Anvil Lake	Nicolet
49	Caberfae	Manistee
50	Silver Valley	Huron
51	Douglas, Petersburg	Tongass
52	Ward Lake	Tongass

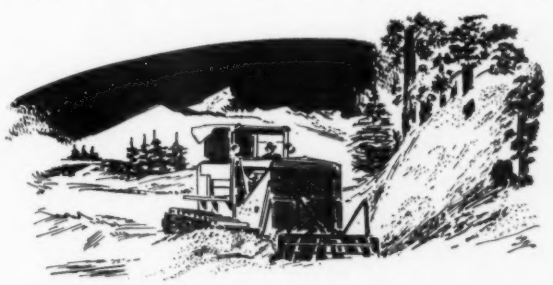
No.	AREA	PARK
1	Dear Ridge	Olympic
2	Paradise	Mt. Rainier
3	Crater Lake	Crater Lake
4	Sulphur Works	Lassen
5	Badger Pass	Yosemite
6	Wolverton	Sequoia-King's Canyon
7	Hidden Valley	Rocky Mt.
8	Mt. McKinley	McKinley

for keeps. Ski tracks are leaving their imprint on these lands and also on mountains of blueprints for winter sports development. That clamor you hear is the call of ski-booted young Americans for more extensive facilities. And the glum looks you get from ski-minded forest and park officials when you mention it means "we haven't got the money."

Meanwhile the trend continues upward. Manufacturers and retailers of ski equipment, lift and tow operators and skiers themselves predict another whopping turnout of beginners this season. Some predict twenty-five percent increases every year for the next ten years—a contingency that would just about smother facilities already groaning under the impact of swelling postwar crowds.

"You should see them," the operator of one Colorado lift remarked. "Up and down—up and down. Thousands of them—and more coming all the time. Entire families, including grandpa and tots, riding the tows. Sorority groups. Soldiers and sailors. Elk delegations. Just about everybody. They can't get enough of it."

Where it will level off no one can say for sure. Some say



Photos by Ray Atkeson

FROZEN FUN — A lull in a storm gave the skier at left a chance to strike out cross country in Mt. Hood National Forest, Oregon. Above, snow sculpture at timberline in Heather Meadows area of Mt. Baker, Washington. Below, a swift descent into the Salmon River Canyon from Mt. Hood

never. It seems likely that a number of "snow bunnies" and "faddists" caught up in a popular surge of post-war enthusiasm will eventually drop by the wayside. But the bulk of the nation's vanguard of hickory addicts —the enthusiasts who never have any doubts about what they are going to do when Saturday rolls around on winter weekends—will probably stick. They will continue to load up their skis and bedrolls and head for their nearest national forest or park.

The forests and parks are proving a great blessing to people of moderate means who are keen for this wholesome sport. Fanned out as they are over vast portions of the western, north central and eastern states, these areas are readily accessible to millions of people. In the West ninety percent of all skiing is on federal lands, eighty-five percent on the national forests or parks.

Most of the visitors to these areas are "local" in the sense that they come from communities within a radius of 100 miles. Facilities in many cases are limited. Some centers have little more than a rope tow and warming and lunch shelters. They do not contain luxuriously-appointed lodges where the beautifully-tailored visitor can enjoy his winter sport vicariously by looking out a window, highball in hand. Nearly all the visitors to these areas come to ski, not to dawdle. And they are learning that skiing need not be an excessively costly sport.

True, the initial investment for equipment is substantial. Good boots and skis, a must both for the sake of safety and comfort, cost a minimum of $35 a pair. Other accessories, including ski poles, windproof raiment, wool socks and ski wax, run the total up to a minimum of $100—a tidy sum, though it wouldn't buy much of a fishing outfit or even a good set of golf clubs. And golf balls now cost ninety-five cents each.

A million visitors were counted at California winter sports centers last season. This is a lineup at the Mt. Waterman ski lift
Sanders and Prater, USFS

Once over the equipment hurdle the going is somewhat smoother. One Denver sportsman who was asked to itemize his weekend expenses at the widely-acclaimed Winter Park slopes, turned in the following expense account:

Bus from home to railroad station and return, twenty cents; roundtrip ticket on snow train including tax, $2.30; ski tow ticket Saturday, beginners, $1; ski tow ticket Sunday, all five slopes (he learned a lot the first day), $2; Saturday lunch, sixty cents, supper, $1; Sunday breakfast (hot cakes and sausage), eighty cents, lunch, sixty cents; bunkhouse charge (he provided his own sleeping bag), seventy-five cents. Total for the weekend, $9.25.

A fivesome arriving in Salt Lake City, Utah, by car to ski the Alta and Brighton slopes, reported a daily per person expense of $7.20. These men put up at a motel in town (generally preferred by skiers to hotels) at a cost of $2 a person. Meals averaged $2.50 a day, and ski lift costs were not less than $2 a day and went as high as $3 in some cases. The roundtrip to the slopes was fifty miles, so expenses for gas and oil were about $1.

This sampling of costs is fairly representative. Some spend more. Others trim expenses by supplementing one big meal a day with their own peanut butter and crackers.

As is evident, these expenses do not compare unfavorably with summer vacation expenses. In Jackson Hole, Wyoming, for example, to rent a saddle horse in summer costs $5 a day. A ski lift costs $2.50. At Brighton, if you ride a horse during summer months, the rate is $1.50 an hour. You can ride the ski lift for seven hours for $3, if you can take it that long.

So by comparison the notion that a skiing weekend is more expensive than other varieties of recreation does not appear to stand up. One advantage of skiing over other types of vacation is that once bunkhouse, meal and ski tow tickets are paid for there is little opportunity to squander money. And flirting with alcohol is not advocated for folks engaged in skimming down snowy slopes on well-waxed pairs of wooden slats.

Over and above food and lodging, principal skiing costs are for lift and tow privileges—privileges that can really flatten Dad's pocketbook if he has three or more husky children all bitten by the ski bug. Lowering these costs would be a big help but, as forest supervisors point out, to operate a lift costs a good deal of

Harold M. Lambert

National forest slopes are proving a great blessing to outdoor-loving Americans. For many skiing is a family affair with everybody from grandpa to tots riding the tows

money. And rates can't be lowered beyond a point that would represent a profitable margin for the operator. On the other hand, lift prices have been kept fairly standard as the operators are subject to federal price regulation.

Actually it is not necessary to use the lifts and tows to enjoy skiing. In fact, one school of ski thought maintains that the hubbub of crowded tows and lifts on downhill slopes defeats the true purpose of skiing, which is serenity. This type of sportsman prefers what is know as "touring" where individuals or small groups strike out on their own cross-country to break new trails.

Sportsmen who favor touring, and they are definitely in the minority at this stage of the game, claim that the United States is basically a "touring" country, not a "downhill" country. The National Park Service has been keenly interested in promoting touring. Some of the parks, particularly Glacier, are ideally suited for it. But while the Park Service reports some progress, the truth is that cross-country skiing strikes most Americans as a pretty lonesome business.

The vast majority of skiers in this country are not seeking isolation when they sally forth on a skiing weekend. The American skier is a gregarious animal. He wants lots of company both during skiing hours and afterwards. The deadly calm of vast unbroken expanses of snow are not for him. Give him the good old lift with the laughter, bumps and spills of well-populated slopes every time.

At night he wants to shuck off his shoes in front of a roaring fire, sing songs and swap stories with other genial souls constituted like himself. He doesn't want any swank but he does want plenty of atmosphere. He's predominately what is known as the downhill type of skier—and a sociable Joe determined to ward off loneliness at all costs.

"From the very first," says F. C. Koziol, forest supervisor of the Wasatch National Forest in Utah, "the average downhill skier aspires to run the steepest and longest trails and to that objective he sets his mind and his learning efforts."

Harold M. Lambert

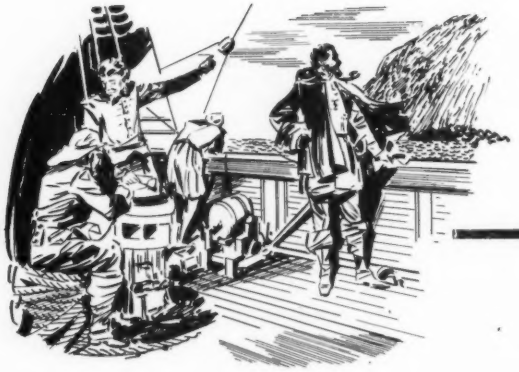
To become a good downhill skier in the shortest possible time is the beginner's ambition and to do this he requires a lift or tow that will cart him back up his slope just as soon as he kites down it. And since his zeal is unflagging and his energy apparently limitless, the beginner's almost grim determination is such that he often shows scant patience with faulty equipment that impedes his progress.

He demands flawless performance from his facilities and, consequently, is creating something of a problem. Skiing in the United States is a comparatively young sport. The first ski tow, a rope affair, was installed at Woodstock, Vermont, as recently as 1933. Development since, what with a major depression and war, has not entirely kept pace with the tidal perimeter of expanding numbers of skiers.

While the crush of humanity at existing lifts and tows is not displeasing to the operators, there has been increasing clamor for extensive expansion of terrain for skiing purposes, together with enlarged buildings, more parking, clearing, trails, additional shelters, cafeterias, storage and service garages, first aid shelters,

(*Turn to page* 38)

Black Rock Forest



BY N. W. HOSLEY

One fair evening in September 1609, Captain Hendrik Hudson brought the *Half Moon* to anchor in the river that bears his name a little above Storm King Mountain. His mate, one Robert Juet, noted in his journal the pleasantness of the spot and the willingness of the red men to trade furs for knives and other trifles. Then he turned his eyes to the southwest and wrote: "The mountains look as if some metal or mineral were in them; for the trees that grow on them are all blasted and some of them barren with few or no trees. . ."

So runs the earliest recorded observation of the Hudson Highlands, a diamond-shaped block of hills beginning on the Hudson River a little below Newburgh, and running southwest across New York and into New Jersey.

Geologists know the area as part of the Reading Prong, formed of crystalline rocks of pre-Cambrian origin and glaciated in the early or Middle Wisconsin age. Lying as it does toward the northern reaches of the oak type, a red oak-chestnut oak mixture is the most common forest cover, with the former increasing on the lower slopes and the latter on the upper. On the higher ground is found either a white oak-hickory or a scrub oak-pitch pine association, both of alpine form—that is, gnarled, stunted and wind-blown. In the moist and shady ravines facing north are hemlock, beech and sugar maple. The surface, extremely rough, is well supplied with streams, swamps and ponds. Altogether the Highlands woodland covers 1000 square miles.

The presence of such a wilderness within sight of the New York skyline may well puzzle social historians; more especially because it is not a remnant but a reversion.

Toward the end of the 17th century, and continuing until about 1880, the Highlands were subject to intense exploitation. Iron ore was dug from the mountains and smelted with charcoal kilned in the region. Here "Baron" Peter Hasenclever built his iron empire and Robert Erskine, an expatriated Scot, made cannon and tools to supply the Continental Army. The giant chain that spanned the Hudson at West Point to snare British warships was forged nearby and buoyed with white pine logs—perhaps from the same hills.

Villages of miners, charcoal burners and woodcutters sprang up in the hollows of the Highlands and roads crisscrossed in every direction. The forests were cut and recut to supply wood for the mines, the steamboats that plied the Hudson and the new railroad which ran along its bank.

Then, toward the end of last century, when industry dwindled and the people moved away, the forest began to close in over the mine shafts and the cellar holes.

That at least 75,000 acres will forever remain in forest is assured by the Harriman and Bear Mountain sections of the Interstate Park, by the Military Reservation at West Point —and by the Black Rock Forest near the towns of Cornwall and Highland.

Covering 3600 acres, Black Rock Forest was established in 1927 by private endowment as a research center for silviculture and forest utilization, and as a demonstration of sustained yield management. In this respect the policy differs from that of the adjacent state and federal lands where forestry in the sense of growing trees for economic use receives scant attention. The major use on these public lands is recreation. In a country where timber and recreation are in high demand, how far the two can be reconciled on the same area is a question of utmost importance. The Black Rock Forest aims to supply both. No reasonable use by the public is denied, but wood as a commercial crop is the final objective.

Enough has been said to indicate some of the problems that faced the forest managers on Black Rock when

Along the historic Hudson River, a privately endowed forest research center is making rapid strides in solving some of the problems that have long bothered forest managers in the Northeast

they took over in 1927. The forest was second-growth, in a few cases more than eighty years old. Recurrent fires and cordwood cutting had combined to impoverish the soil and increase the percentage of sprouts. Local markets for wood had dwindled and the open land was seeding in to such weed species as gray birch, pin cherry and redcedar.

Restoration, then, was recognized as the most urgent task and is the principal theme of reports issued by the Black Rock Forest staff.

It was realized early that intelligent handling of the present forest depended upon an understanding of the local geology, the soils and the original forests. Consequently, specialists were brought in for basic studies. Results of one investigation are set forth in the bulletin *Glacial Geology of the Black Rock Forest*, by Charles S. Denney, Jr., which describes in detail the development of the Hudson Highlands and of the varied soil types of Black Rock Forest itself.

The early work on soils raised many questions. Were the ridge soils deficient in certain minerals? Did different species vary in their needs for particular soil elements? Did some trees improve the soil while others impoverished it? Was it possible to determine nutrients available for certain trees by analyzing their foliage?

Careful, fundamental research on problems of this character has been fruitful. For example, pine seedlings grown in pot cultures have shown that on the ridges only half the amount of nitrogen was available as in the best soils of the coves. The soils of the forest were found to be deficient in phosphorus. It was also found that by periodically testing the nutrients in pine seedlings and fertilizing the nursery seedbeds for optimum amounts of the nutrients, two-year seedlings could be grown which were larger and better balanced than three-year seedlings or transplants grown under usual nursery conditions.

Red, white and chestnut oaks, red maple and aspen grew fairly well in soils poor in nitrogen. Beech, hard maple, pignut hickory and black gum did well only with medium nitrogen supplies. Tulip, white ash and basswood made best growth only with plenty of nitrogen.

An interesting sidelight on the complex problem of silviculture came out of the observation that browsing by deer on fertilized plots increased with the nitrogen supply.

In developing stands of the species best suited to the various soil types and topographic locations, the character of the pre-colonial forest is of greatest significance. References, such as the one quoted from Juet, are fairly abundant in early journals. They tend, however, to be more tantalizing than precise since they can usually be interpreted in more than one way. In strong contrast are the two historical studies made of the forest. One, by Henry H. Tryon, director of Black Rock Forest, concludes that there were more conifers, especially hemlock, in the original stands than there are now. White pine seldom, if ever, he believes, formed pure stands. The stands varied from the best combinations, mainly hardwoods, at the lower elevations to the scrubby oaks, pitch pine and redcedar of the ridgetops.

Dr. Hugh M. Raup, of Harvard University, examined with painstaking care the various forest types and their relation to topography. His most striking conclusion was that the last two centuries have not profoundly changed the forest cover as to species. Cutting and the boundaries of burns, by which human activity is traced, soon become obliterated. Moreover, he reported, the plant associations are extremely regular in their distribution and respond only to long-range climatic influences. Therefore, the kinds of trees Robert Juet saw that fall evening so long ago perhaps scarcely differ from what can be seen from the Newburgh-Beacon Ferry today.

(*Turn to page* 48)

The white oak forest at high elevations (above) is gnarled, twisted —in the coves (below) are mixtures of red oak, birch and tulip

Tranquillity or mobility
is the problem posed by
the invasion of jeeps in
our wilderness retreats

Jeeps in the Wilderness

By ARTHUR H. CARHART

ROBINSON Crusoe felt a tingling warning when he discovered a human footprint in the sand. Last summer many outdoor folk received a similar jolt.

They had hiked sweaty miles. Or they were saddle weary after traversing long trails. They sought solitude and the breath of wilderness. If they found these, dollar cost and physical effort would be compensated with rich hours of recreation.

But they were robbed of no small part of the enjoyment they had anticipated. Instead of the imprints of bare feet in the sand, they found tracks of motorized vehicles ripped into lake shores, the hillsides, the soft, velvety forest floors of canyons where evergreen needles had mouldered for decades without more than the hoofprint of deer or the transient mark of a horseshoe.

The jeeps had clawed their way into the back country, leaving their spoor laced across the wilderness.

The jeepers bumped their way onto the great, flat cloudland of the White River Plateau in Colorado. Once over the guardian rim-rock, they had scuttled miles across the table-topped plateau. They reached and fished lakes never before attained except on foot or horseback. Later, hunters rambled up the same rough trails, guiding their jeeps into the heart of elk and deer country.

Four-wheel drive vehicles wheeled into Sawtooth and Fan-tan lakes in back country near the northeastern corner of Yellowstone National Park. Tracks suggested the shorelines might have been the site of hot-rod races.

A wilderness area in the Teton National Forest near Jackson Hole was invaded by the jeep. Reports come of hunters in jeeps that traverse antelope country in Nevada and deer range in Utah faster and over rougher roads than game wardens can negotiate, and thus escape checking by officials. Jeeps have clawed up grassy slopes in Sagauche Park in Colorado, far beyond former limits of automotive travel. They

desert roads and climb grades no other car can mount. Sod has been torn away, and gullies are eroding in tire tracks. When this happens, the invaders simply shift lines of travel to make new tracks and more gullies.

That human use of extensive outdoor areas which we designate "recreation" is basically governed by the mode of transportation incident to that use. Determine the type of transportation and you immediately determine whether the use will be for picnics, summer homes, auto camping, pack-tripping, or hiking.

Canoeists may find some pleasure in traveling a stream bordered by cottages, night clubs, or wharves. But when they want the full reward from paddle-effort, they seek such areas as the Quetico-Superior Wilderness in northern Minnesota and southern Ontario.

Those who find pleasure in riding horses may take a gallop through a city park, but when they seek the full return from saddle travel, they take a pack trip into the western mountains.

The canoeist soaking in the spirit of the lake country at a camp in the Quetico-Superior feels cheated when an amphibian plane sets down in the next bay, fishermen pile out, get their limit, and wing away before sundown. The pack-tripper in the Rockies feels the very breath of the wild beaten to shreds by the pounding roar of motor vehicles.

Last year, the jeeps, half-tracks and command cars almost explosively blasted this essence of wilderness in many areas. With smashing suddenness, we face the question of whether or not power-driven types of transportation shall convert the little remaining back country to the level of the millions of acres already available to motorized travel.

This is a problem that must be met immediately and solved quickly. For the invasion of the jeep into the lands that heretofore have been inviolate to motor traffic will be an accomplished fact, not within a few years, but within a few months.

As strictly trail country becomes less in area, the values it may supply in recreation become more precious.

Also, the proportion of the people who use the wilderness is increasing —by mere increase in population and by a rising urge to seek the qualities of true wilderness to get away from power-driven living. Motorized transport into wilderness dissipates the values it holds for a host of people. There can be no fair questioning of guaranteeing to those who seek wilderness sanctuary those facilities for such recreation.

Nearly three decades ago, when the late Aldo Leopold was regional forester for the U. S. Forest Service at Albuquerque, New Mexico, and the writer was blazing trails in planning human use of the national forests, we discussed planwise development of recreational facilities of the forests. Shortly afterwards Dr. Leopold began his campaign to have wilderness recognized as a valid value and use of forest areas. To him should be credited the success in securing recognition of this truth, and the program of designating the wild and wilderness areas within national forests.

This is an application of the well-recognized principle of zoning. Long since the urban communities have adopted ordinances which prevent industrial or commercial enterprises from invading residential districts and destroying existing values of the homes established there.

The zoning of outdoor areas to protect recreational values is no different in principle, no different in need, than allocations in planned land use within urban communities. The land area merely is designated for that use for which its physical features and its relation to other areas and their uses is best suited. In cities we have designated truck routes; boulevards and parkways are reserved for passenger car traffic. This is not dissimilar in principle or planning to what may be done in designating the type of traffic which shall be allowed in any given area of recreational lands in the outdoors.

Consider another comparable example. In our city parks we have baseball fields. We do not set up tennis and horseshoe pitching courts in the middle of the diamond and allow tennis players or horseshoe pitchers to go into action in the middle of a ball game. There is allocation and reservation of area to each type of recreation so that neither disrupts or frustrates the other.

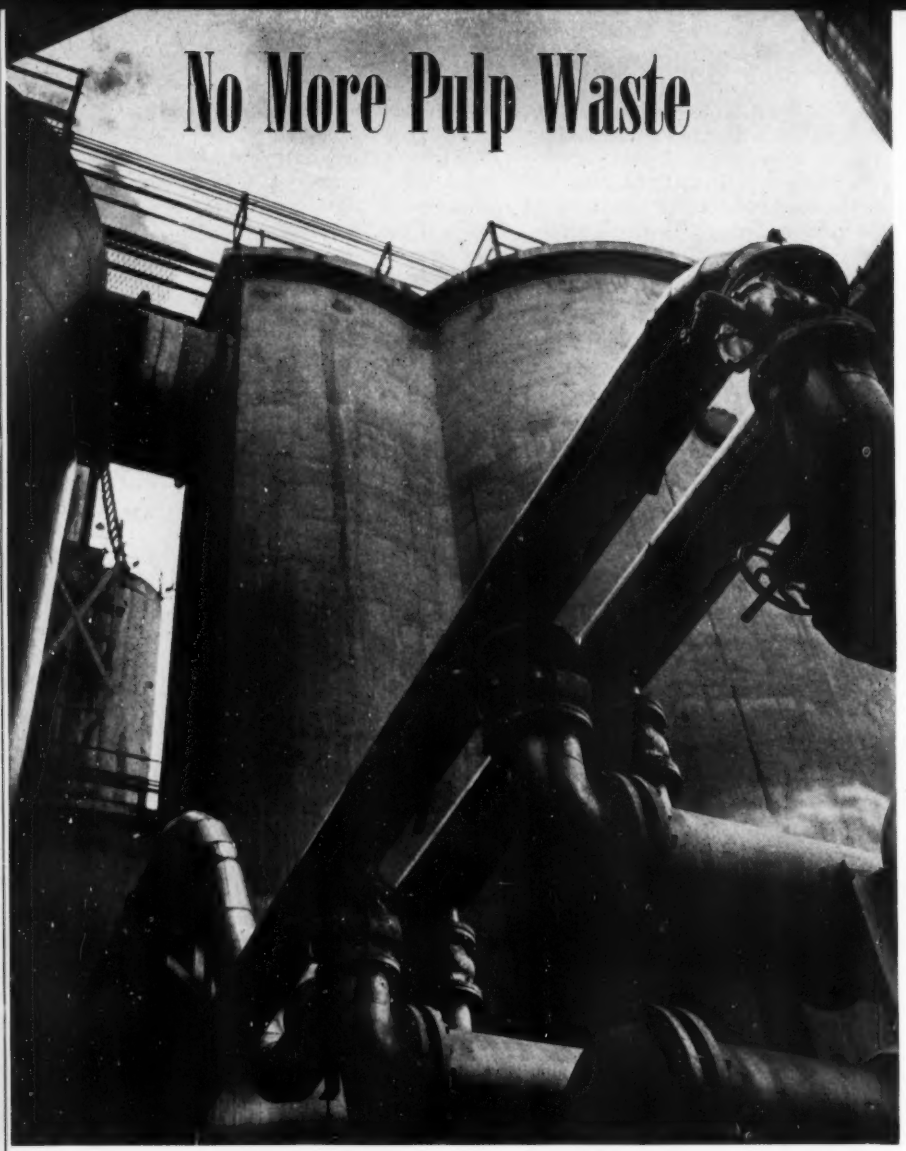
Gullied erosion leaves its ugly trail where jeeps have worn their tracks through the sod. When this happens, adventurers alter course, start anew

The zoning principle is the means of checking the invasion of back country by motorized vehicles. We must recognize that governing transportation of this type will nullify certain human use values existing only in wild country beyond the auto roads.

There is certainty that some jeepers will take the attitude that if they can ram their vehicles into these areas they are entitled to do so. It's their national forest isn't it, much as anybody's? Of course it is. But so is the park baseball diamond their property—just as much as it belongs to the teams on the field and the spectators in the bleachers. Yet they would not expect to drive their little

(*Turn to page* 42)

No More Pulp Waste



Part of the nation's first sulphite liquor recovery plant erected by the Weyerhaeuser Company. Heat extracting valves are shown in foreground

By ALBERT ARNST

AN eighty-year-old riddle of the pulp and paper industry—how to convert vast quantities of waste into useable solids and liquors—has been solved. What's more, out of the very solution looms a new source of fuel energy so vitally needed in pulp plants, plus the elimination of one of the industry's biggest bugaboos—stream pollution.

All this is an accomplished fact in the new plant Weyerhaeuser Timber Company has put into operation at Longview, Washington. This first installation of its kind in the world climaxes ten years of costly research in cooperation with the Howard Smith Paper Mills, Ltd., and the Babcock and Wilcox Company.

Howard W. Morgan, manager of Weyerhaeuser's pulp division at Tacoma, in announcing this revolutionary development says the Longview plant is expected to attract scientific inspection from internationally famous pulp chemists. Its complicated piping, burners and new processes perform these three functions: (1) recover chemicals from liquors used in production of sulphite pulp; (2) convert electrical energy and steam from organic solids in the liquors and (3) eliminate stream pollution caused by waste liquors.

It is planned to make the recovery process available to the nation's pulp industry by granting licenses under patents on terms best adopted to its widespread use. The Babcock and Wilcox Company of New York, will be the exclusive licensing agent.

The background of this discovery and the approaches tried in getting to the eventual solution are of unique interest. Schoolboys know that the sulphite process is the best and cheapest chemical pulping method for production of quality rayon or high-grade paper. They also know that for every ton of pulp produced around 2000 gallons of the chemical liquor used in digesting wood chips must be disposed of as "waste."

This liquid contains from ten to twelve percent of dissolved organic solids, an amount equal to the actual weight of pulp produced. Sulphite waste liquor produced daily by a 150-ton pulp mill has a thermal value equivalent to that in 100 tons of coal. The magnitude of this economic loss has stimulated many scientists to seek a practical recovery process.

Recovery studies have followed two lines: to "dispose" and to "utilize" the waste liquor.

In disposing, efforts have been made to reduce the B.O.D. (Bacteria Oxygen Demand) of the waste liquor to a point where little decrease in the dissolved oxygen content will occur in waters receiving the effluent from sulphite mills. This means using trickling filters, reaeration and chemical alteration of the carbohydrate portion of the waste liquor. Because none of these treatments recover any basic values from waste liquor they are a continuing expense in equipment, power and maintenance and add to the cost of pulp produced.

In utilizing, two attacks have been used. One group of workers has attempted to convert the organic matter into useful chemical compounds or to extract for commercial uses the lignin or carbohydrates by precipitation and evaporation. Something like 15,000 tons a day of these organic solids are produced by North America's sulphite mills.

Considerable progress has been made. Today commercial alcohol, yeast, molding products, lacquers, coatings, vanillin, phenolic products, tanning extracts, fuel, cooking acid and binding agents are produced. New products such as these, however, bring up the problem of developing widespread markets.

Products that can be produced from organic matter in waste liquor no doubt will be extended, but time-consuming efforts will be required. Meantime, the solids are dumped into streams and comprise a pollution problem which many states are combating by legislation.

Another group of researchers

The riddle of pulp waste has been solved at this Longview, Washington, plant. Now waste liquors, polluters of streams, can be profitably salvaged

tackled the problem of converting the B.T.U. energy of these organic solids into fuel energy, vitally needed in pulp plants. They hoped in the process that they could also find a means of recovering the chemicals used in sulphite pulp production. Their objective was to work out a cyclic process which would keep all the "waste" at home and permit the pulp producer to use it without going into expensive market development for new products.

In the middle thirties George H. Tomlinson of the Howard Smith Paper Company, Ltd., at Cornwall, Ontario, discovered that magnesium oxide could be used as a pulping base in place of calcium sulphate. He patented the process. Waste liquor resulting from use of magnesium oxide could be evaporated and burned to recover a high percentage of chemicals.

Doing this with the conventional calcium base had always brought about trouble with lime scale and necessitated expensive equipment maintenance. The Babcock and Wilcox Company worked with Tomlinson to develop suitable boiler designs and Tomlinson's company carried out pilot plant operations beginning in 1937.

Meanwhile, R. S. Hatch and his associates of Weyerhaeuser's pulp division were working independently on the same development. Believing the process commercially possible, the company built a complete pilot plant which operated for over a year in connection with a commercial digester.

The three groups eventually entered into a cooperative arrangement, the object of which was to bring the process to full commercial development as quickly as possible without duplication of effort. The pulp industry would be offered an efficient and economical answer to the chronic problem of waste liquor utilization. Weyerhaeuser's sulphite mill at Longview, Washington, was selected as the first to change over to the new process, because it was logically situated to derive the full benefits of integration in log processing, already advanced to a high degree.

Entry of the United States into World War II prevented the immediate conversion of the mill to the new process. As soon as materials became available after the war, construction plans were readied. Actual work was begun in 1946 on the project just completed.

What happens in the group of new buildings which house the world's first sulphite liquor recovery plant is of extreme significance to the layman interested in conservation of America's forest resources.

In the new magnesium base process, evaporated waste liquor is burned to recover magnesium oxide dust. Sulphur in the liquor passes off as sulphur dioxide in combustion gases. The magnesium oxide is made into a slurry with water, which when combined with sulphur dioxide gas reforms magnesia base cooking liquor.

Burning the waste liquor gives off

enough heat to generate steam and power to supply all or part of the requirements for the entire process, depending upon equipment efficiency and chip cooking conditions. Because of the relatively high cost of magnesium oxide compared with limestone, high efficiency throughout the process must be maintained. Costly and well-planned equipment and techniques are necessary.

Here's how the process works in Weyerhaeuser's installation, located between the modernized sulphite pulp mill and the new sulphate mill. The cyclic recovery consists of seven steps: dumping and washing, evaporation of waste liquor, burning waste liquor, separation of magnesium oxide ash and sulphur dioxide, cooling of flue gases, absorption of magnesium oxide dust and acid fortification.

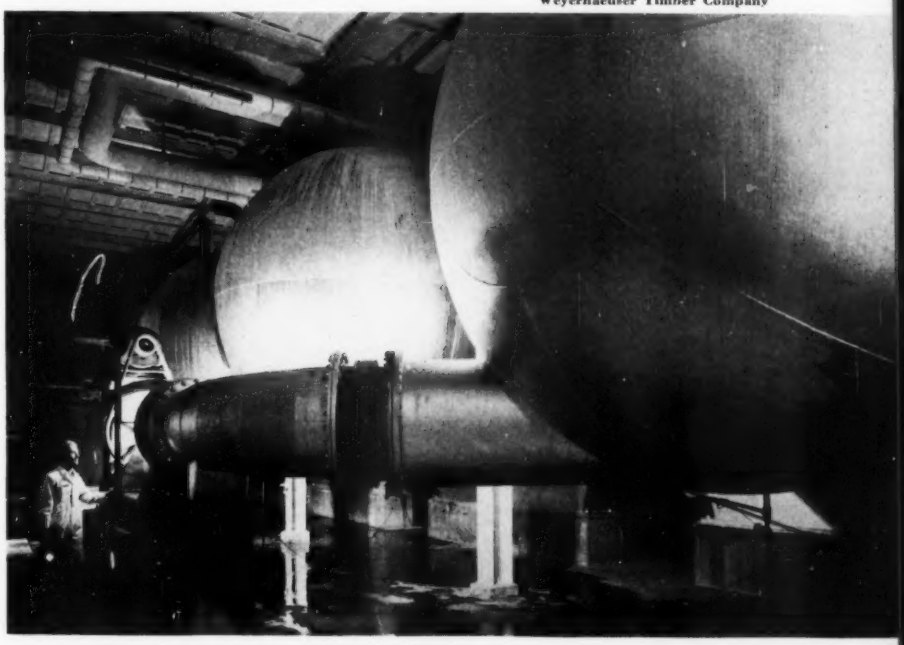
Cooking of wood chips in digesters is done with magnesium oxide instead of lime. At the end of the cooking period the digester is gassed down to atmospheric pressure to recover all available sulphur dioxide. Instead of blowing pulp from the digester as in the normal sulphite process, it is washed out with waste liquor into dump chests.

The pulp then goes over vacuum washers and its waste cooking liquor saved. This effluent has a twelve to fourteen percent solid content. Liquor is put through multiple effect evaporators and disc evaporators to eliminate excess water and increase organic solid content to about fifty per-

(*Turn to page* 45)

Like something from Mars are these sulphite dump tanks, through which pulp is "washed" after the wood chips have been cooked with magnesium oxide

Weyerhaeuser Timber Company



Snow Hermitage

By OREN ARNOLD

TWO of us desert citizens were on business assignments in the high country of Arizona when we heard about J. B. Edwards and Lea Master. A forest ranger told us, "Those two are on a seven-month vacation, with pay. They are entirely cut off from civilization. They are alone, but they are in a magnificent resort hotel at the most inspirational point in America—and I wish I was with them!"

Edwards and Master, then, had done what all men yearn to do at one time or another; they had accepted a chance to "get away." Their unique situation fascinated us. They had departed in October, and now, in February, my friend and I determined to visit them. We were lured partly by curiosity and man-love of adventure. But we wanted also to know if they would be different, temperamentally and emotionally. Would they be happier after having known the pure peace of isolation? Better, as we measure men?

They had gone up trail just ahead of the first autumn storm. Well do I remember how it came—wind that sang sweetly in the pines, like soft violins beginning an overture, but swelled soon in crescendo and burst finally into a dramatic fury of ice and cold. Between us and them now lay forty-four miles of white that buried saplings and leveled the rocky forest floor.

The rangers and other skilled outdoorsmen told us we couldn't possibly hope to reach Edwards and Master. But my friend and I gathered four others and, by astonishing means, we did get in.

As we traveled each of us felt a sure release. We, too, were slipping away for a brief interval; from taxes and strikes and business routine, from women and worry and atom bombs. Hours before we saw them we sensed the mood which had caused J.B. and Lea to take flight for a longer period. We felt the spiritual lift of the mountains, the zest of altitude, the oneness with the wilderness—stimuli that have awakened responsive chords in men's breasts since the beginning of time. For we were on a high rock peninsula-of-the-sky above the world's greatest natural wonder — the Grand Canyon of the Colorado, north rim.

We had speculated on how the two hermits would receive us—anticipating melodrama of the Grade B kind. Actually, they were barely more than courteous at first. They did not whoop or gush; they just stared, hungrily. With all the majesty of the Canyon on three sides of them, with further inspiration from the incomparable virgin pine forest of the Kaibab, with air so crystal pure that it sings down your nostrils and stimulates you like costly wine, with skies and clouds and sunsets to drive an artist mad, these two wanted now just to stare at people, to touch us, to hear us, to share the beloved trivialities of talk and laughter that make gregarious man what he is.

They hadn't seen a newspaper or magazine for four months. They had no radio. They were supposed to have a telephone line to the south rim, but at this altitude a blizzard snorts across the Kaibab Plateau every few days and thins out such upstart and unrooted growths as telephone poles. Our welcome, then, was touching; we had to cover up their embarrassment with loud, good-natured talk.

I watched J.B. He is a sixty-four-year-old bachelor and ex-cowboy, with a crooked leg. Years ago a horse fell on his knee and broke it. J.B. dragged it nine miles through snow to a friend's cabin where he holed in two weeks. By that time he could get out to a doctor, but he wasn't in the mood to bother with it any further. We found him bald and bareheaded, except that snow gave him a foxy-grandpa fringe. Moisture fogged his glasses, which seemed to float somehow on a mobile sea of snowy cheek hairs, but behind them he was beaming. He shook hands and stood for a while watching us unload.

Many long to get away from it all — from worry, taxes, even women! Here are two men who did just that. Read what seven months on Grand Canyon's lonely north rim did for them

"Declare to john!" he exclaimed suddenly. "You men'll be starved. Reckon you'd like a bushel of biscuits."

Lea jumped at that. "I'll cut out a ham," said he. Both had been needing action, as a salve for feelings.

From that moment we fared as kings never did. Not dainties, not pretty salads from the women's magazines, not dishes that a chef serves, but he-man meat and bread and potatoes, peas that adorn a man's knife blade like buds on the silvery aspen, halves of peaches quick-frozen by nature but thawed by a roaring stove and coffee. And what coffee!

"You take and put one cup of grounds to every cup of water," said J.B. proudly, "and then at the end add another cup of grounds to be sure it's tasty."

We had brought in a hind-quarter of beef, fresh eggs, two pounds of candy, store-bought cakes and a sack of oranges. These things made us Santa Claus, and it was good to see the two grown "children" chuckling. Until two o'clock that first night we swapped talk with them. Winter eavesdropped, ears close to the cracks and pressed against the window pane, or slipping down the chimney with an indignant "Whuff!" We ignored it.

We paused for half an hour to let J.B. and Lea open their mail which we also brought. Have you ever opened your Christmas cards on Washington's birthday? J.B. had a stack of beauties; for some of the prettier embossed pictures his own cabin or the pine tree out his window might have been the model. A letter dated in November told him that the new Chevrolet he had ordered last summer was now ready for delivery in Cedar City, Utah. Two new gasoline credit cards had already expired. Once the old chap burst out laughing at a paper. It was famous Form 1040 from the U. S. Collector of Internal Revenue.

"They got to come and git me!" said he. "It's one reason I'm hibernatin' up here."

There was a note saying Ed Laws had died. J.B.'s hand shook when he told us about it. He ducked his head to peer at us benignly over his glasses. "Ed's gone. Old Ed; as good a man as God ever let live. Says here he et some poison food outen a can, dad-damnit! He wasn't due to be took."

Ed Laws and J. B. Edwards—they pronounce it "Edderds" up there in the rim country—were Canyon cronies. Ed had spent winters alone on this very spot. Each was brought up within shouting distance of this greatest natural wonder, had fought outlaws and nature here for many years, had developed a mellow old age that was somehow as grand as the Canyon itself.

The Grand Canyon of the Colorado is singled out by many as the world's greatest natural wonder. Across this chasm is the isolated north rim on which J. B. Edwards and Lea Master lived as snow hermits for seven long winter months
Photo by Virgil Gipson

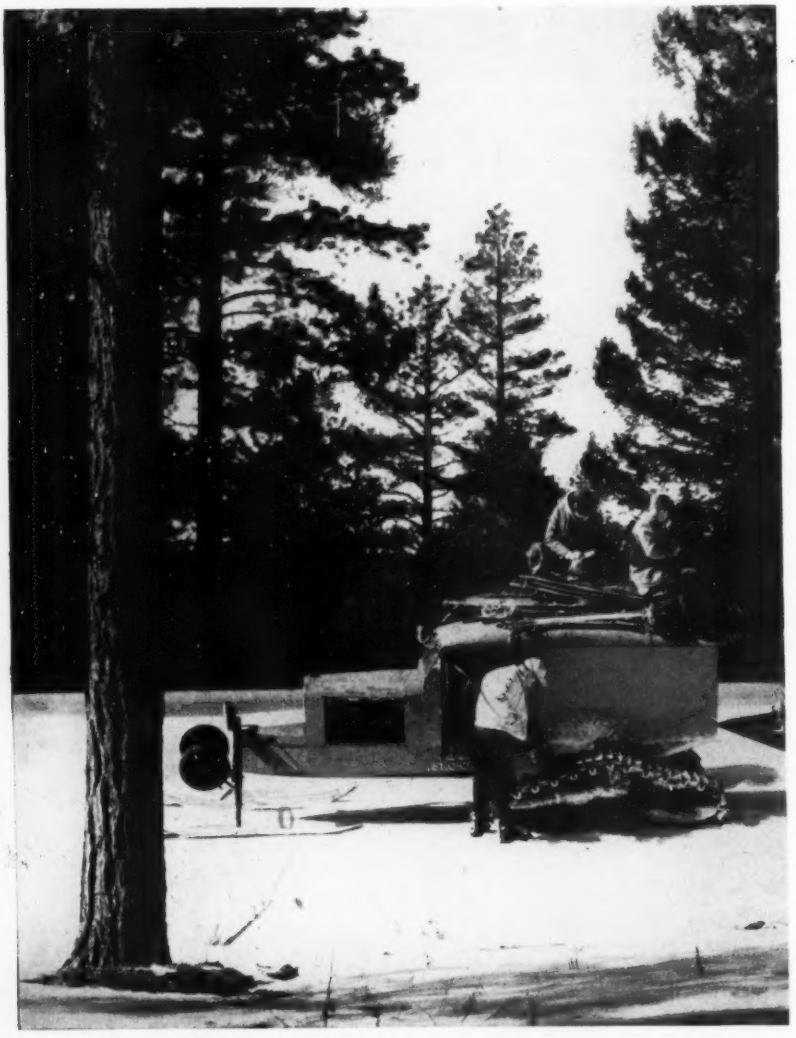
Lea, who is twenty-seven and looks like a movie star except for an excessive shyness, reverted to his childhood when we gave them the parcel of mail. First thing he opened was the funny papers. Seems that Skeezix had been discharged from the Army and opened a prosperous little business, he and Nina, since Lea Master last read of them.

Lea had comparable plans of his own, including a small business and a bride. He has seven Navy years behind him—rode old *Saratoga* through hell at Guadalcanal when she took three Jap torpedoes and five suicide bombers in twenty-four hours. It was during that battle, in fact, that Lea began to yearn for a long rest where there was peace and solitude and beauty. In a measure he typifies all our veterans, all our youths who rushed to the excitement of war and were grimly disillusioned.

"I studied the world maps and thought about every place," says he, "and finally I figured the Grand Canyon was my goal. I got a job down at the bottom in the summer of '46 but I was still around machinery. Then I had this chance to spend the winter up here—and think."

"Think" is not a broad enough word for what you do on the Canyon rim. You meditate, reflect, reappraise, philosophize and grow; you restore your soul. The great gorge is like the ocean itself, only more so, in that it casts a spell. It is more than a little benumbing; people under its strange hypnotism are seldom inclined to talk much. I tried to probe some gem of wisdom about its influence out of elderly J. B. Edwards. Washing breakfast dishes with him one morning, I suddenly got it.

This odd looking vehicle is known as a Sno-Cat. It lives up to its name, says Author Arnold, who used it in his climb to Grand Canyon's north rim



"I don't feel as important up here on the Canyon rim," said he, "as I do in town."

Here the sheer majesty of the wilderness shrivels your ego—and you like it; religious or not, you somehow sense that you are amid the Handiwork. It is immensely calming. It stimulates thinking that you perhaps never dreamed would be your style.

Sunrise and sundown over the Canyon are the magic hours. Colors are never so dramatic as then. The pinyon trees, that lean over the rim like tourists, become a fantasy forest in silhouette against mauve and purple, red and bronze; shadows take on an eerie mistiness, fog phantoms glide in and out of caves. Time, pure Time, seems almost to become tangible. We visitors went our separate ways to see those things. Elderly J. B. and young Lea made it a routine at dawn and dusk, their one never-ending pleasure.

We guests were six in number, and we had signaled the two isolationists before coming in. Across Canyon, at the closest outpost of civilization, was a village with a power house, and we tooted its big whistle which sounded like that of an ocean liner. Lea and J. B. could see the spurt of vapor, and fifty-two seconds later hear the sound, which meant that the airline distance was only about eleven miles. Yet we six had to travel in motor vehicles for most of two days in order to reach them, and a letter takes four days to go between those two points in summer. We had signaled from the south rim.

We got the hunch to go visiting because we were already in the cold country doing snow surveys for the U. S. Soil Conservation Service, and we were immensely proud of a new vehicle called the Sno-Cat. It can travel snow as no other vehicle has ever done. It is like a small tank or tractor, except that front wheels can be replaced with skis in ten seconds.

A Dodge motor with 110 horsepower linked to caterpillar-type tracks sent us clattering over great granite escarpments swept free of everything, or with equal ease across drifts hundreds of feet deep. We even had a trailer, on skis, that carried 1200 pounds of men and duffel. This odd little train would whuff through the trees, up incredible slopes, down deep valleys and back onto the level again, like some child's fanciful toy from a never-never land. But it is not imaginary, it is real and costs about $3000, and for going to isolated places over snow where man has

(*Turn to page* 43)

EDITORIAL

A World Forest Policy

During the recent Washington conference of the Food and Agriculture Organization of United Nations, J. D. B. Harrison, the distinguished Canadian who heads up the forest economic section of FAO's Division of Forestry and Forest Products, straightened out some of the kinks in the thinking of forest planners slow to react to a changing world.

What he told a Washington conservation forum is that the world of tomorrow will face critical deficiencies in forest products unless *all* productive forests are brought into use and haphazard exploitation gives way to orderly management. Furthermore, he said, accomplishment of this will hinge upon not only the ability of individual nations to develop maximum programs, but upon regional and world-wide cooperation between nations. In other words, a world forest policy.

Mr. Harrison is not posing as a prophet. What he is saying is that even in a world torn by chaos and conflict, two and two still make four. When supply is short, demand cannot be met. And shortages of forest products are even now with us, with little relief in sight, due in large measure to a high level of general economic activity in this country and in Canada, to war damage repair and dislocation of normal trading channels in Europe, and to extreme shortages of long standing in the Middle East and in Asia.

But it is the future, not the present, which concerns Mr. Harrison. He knows that progress of civilization increases demand for wood products. He knows also that rapid increase in the world's population and the desire of people everywhere to attain better standards of living will but multiply the problems of supply.

When this realism is measured against the yardstick of existing forest conditions, there is but one answer: the productive forests of the world must be brought under intensive management or more millions of unhappy people will in time be searching for a woodpile that isn't there. In Mr. Harrison's words, "Unless such management is established, increased drain on the forests will result in their progressive devastation."

Where this can lead is graphically illustrated in FAO's report on the Far East. In India and China, with more than forty percent of the world's population, wood available per person is less than ten cubic feet a year, or the equivalent of two ordinary house chairs—and millions have virtually no wood at all.

"In areas of India and Pakistan," Mr. Harrison revealed, "there is hardly a quarter of an acre of accessible productive forest for each man, woman and child; in China less than one-tenth of an acre."

Conditions in the Near East and the Middle East are even more severe—about three cubic feet of wood per person, or one-sixteenth of the per capita consumption of Russia, for example. Egypt is now without forests, while Saudi Arabia and Iraq are only slightly better off. "Over much of this region," Mr. Harrison said, "soil degradation has progressed so far, and climatic conditions are now so severe, that any reforestation program will be difficult and very expensive."

Fortunately, the world as a whole presents a much brighter picture. FAO estimates a total world forest area of nearly ten billion acres, six and a half billion of which may be classed as productive—that is, lands where growing conditions are good enough to permit systematic forest management.

And what is brighter still is that if only the two and a third billion acres of softwoods are made accessible and properly managed, the yield would be at least sixty billion cubic feet of wood — a production vastly greater than is now taken from all forests. When the hardwood forests, nearly twice as extensive as the softwoods, are added, the challenge—the responsibility of this generation to future generations—becomes clear.

Yet, from a world-wide point of view, man's treatment of the forest up to the present has been anything but promising. For example, Mr. Harrison reports that national policies are still lacking in many countries, and are far from adequate in others. Regional policies, particularly necessary where the forests and forest industries of different countries are naturally complementary to one another, have never been formulated.

There is great need, too, for expanded research programs, especially in the development of uses for the vast amount of timber, now considered commercially unimportant, in the forests of the world. And improvement of transportation facilities, particularly in nations with abundant untapped forest resources, is essential to get more wood on the world market.

The most practical approach to bringing the forests of the world under adequate management, Mr. Harrison believes, is through the FAO. Indeed, much ground has already been broken. A European Commission for Forestry and Forest Products, through which representatives of member governments can discuss long-term problems and seek means for their solution, has already been created. A Latin American Conference on Forestry was held last April, and a commission similar to the one in Europe will soon be functioning. The Middle East and Africa are in line for the same treatment.

"The system adopted," Mr. Harrison explained, "insures that governments themselves will determine, through mutual discussion, the most urgent regional problems and the manner in which they should be tackled. FAO acts as the coordinating agency. Out of this the ideal of a world forest policy may emerge—and the possibilities of the world's forests point to the great advantage which might flow from such an outcome."

Once the peoples of the forest producing world fully realize that the choice between forest sufficiency and forest famine is theirs to make, and that the decision must be made now, the chances are that few will contest the cogency of Mr. Harrison's conclusions. And only the foolhardy will fail to recognize that international cooperation and teamwork are the foundations for enduring peace and security.

Sir Shane Leslie's tall and stately trees surround his ancestral mansion at Glaslough

An Irish Forest

By HAZEL LITTLEFIELD SMITH

THE finest forest in Ireland today may be found along the northern boundary of County Monaghan, on the estate of Sir Shane Leslie, and extending over into County Tyrone, on the lands of the Earl of Caledon (General Alexander). Pleasant rivalry exists between the two estates as to which has the taller larches or greater sitkas. Actual measurement, however, has established the Leslies' ninety-foot larch as the taller and their sitkas of greater girth.

The forest, caring not at all as to whether Ulster was right or wrong, or by what sign the Church shall govern, has flourished on both sides of the border, which is marked here by nothing more than an old stone wall wandering through an oak woods, and by an invisible line through the Cor Bog which only the turf cutters know.

The village of Glaslough guards the entrance to the park lands of the Leslie demesne. Along the drive from the lodge to the great house stand ancient beech and oak, sycamore and evergreens, and some of the most beautiful specimens of Spanish chestnut in Ireland. The stately stone mansion, which has been the ancestral home of this famous family for generations, stands among terraced gardens on the shore of Green Lake. Above the tall gables and great chimneys of the house tower the noble trees.

From the lawns one enters the forest by a path which follows the wandering course of a small stream. The

Finest forest in all of Ireland? Faith, it's in County Monaghan on the Sir Shane Leslie estate

deep-thrust roots of fir and pine, larch and redwood draw rich nourishment from the moist soil. Great beeches stand in quiet majesty, their boles a silvery radiance, and the sweeping branches extended in a gesture of benediction. Misty, golden light filters through the green to touch the fern and flowers on the forest floor. There is enchantment in this Irish forest—a dreaming peace that pervades the soft shadows and floats down the shafts of gentle sunlight.

By way of a farm road winding among the trees, one comes to Fairy Lake, a misty jewel ringed by slender white birch. It is told that an artist visiting the Leslies set up his easel on the mossy bank of this lake. Tea time came and, as he had not progressed very far with his work, he left the canvas and open paint box and went off to join the family. Absorbed in delightful company he forgot to return for his materials. The next morning as he approached his easel he was bewildered to find the painting completed to the last delicate brush stroke. The leprechaun had finished it for him—an exquisite landscape now in the possession of the Leslies.

White birch and alder grow naturally in the cutover bog, and Scotch pines seed themselves on the hill slopes. Beyond the farm fields rises a high wood of pines which have been planted from seedlings from the mother forest and from imported stock. Intelligent cutting and planting has kept the forest in a healthy condition, and each generation of tree-loving Leslies has carried on what their grandsires began long ago. Sir Shane, on his walks in field and woods, always carries a billhook which he wields vigorously to prune away deadwood and cut out unwanted growth.

On an open hillside above the Green Lake stands a very old silver fir. At the death of Sir Shane's grandfather this tree dropped a branch, and again at the death of his father. In Ireland, this is not an unknown phenomenon. It is said that a lime tree at Cuckfield Park does the same thing for the Sergison family, and an oak for the Earls of Lonsdale. Sir Shane has carefully examined his fir tree to determine which branch is likely to fall next and has placed beneath it a stout prop of English oak.

It was from one of the great trees on this estate that Winston Churchill took a terrible tumble when about ten years old. Winston is Sir Shane's cousin (their mothers were sisters, Jenny and Léonie Jerome, of New York) and his boyhood holidays were often spent with his aunt and uncle at Glaslough. One day while playing Indian with his cousins, he leaped from a branch much too high and suffered concussion of the brain. The family laughingly declare that Winston's brilliant mental capacities were released by this fall.

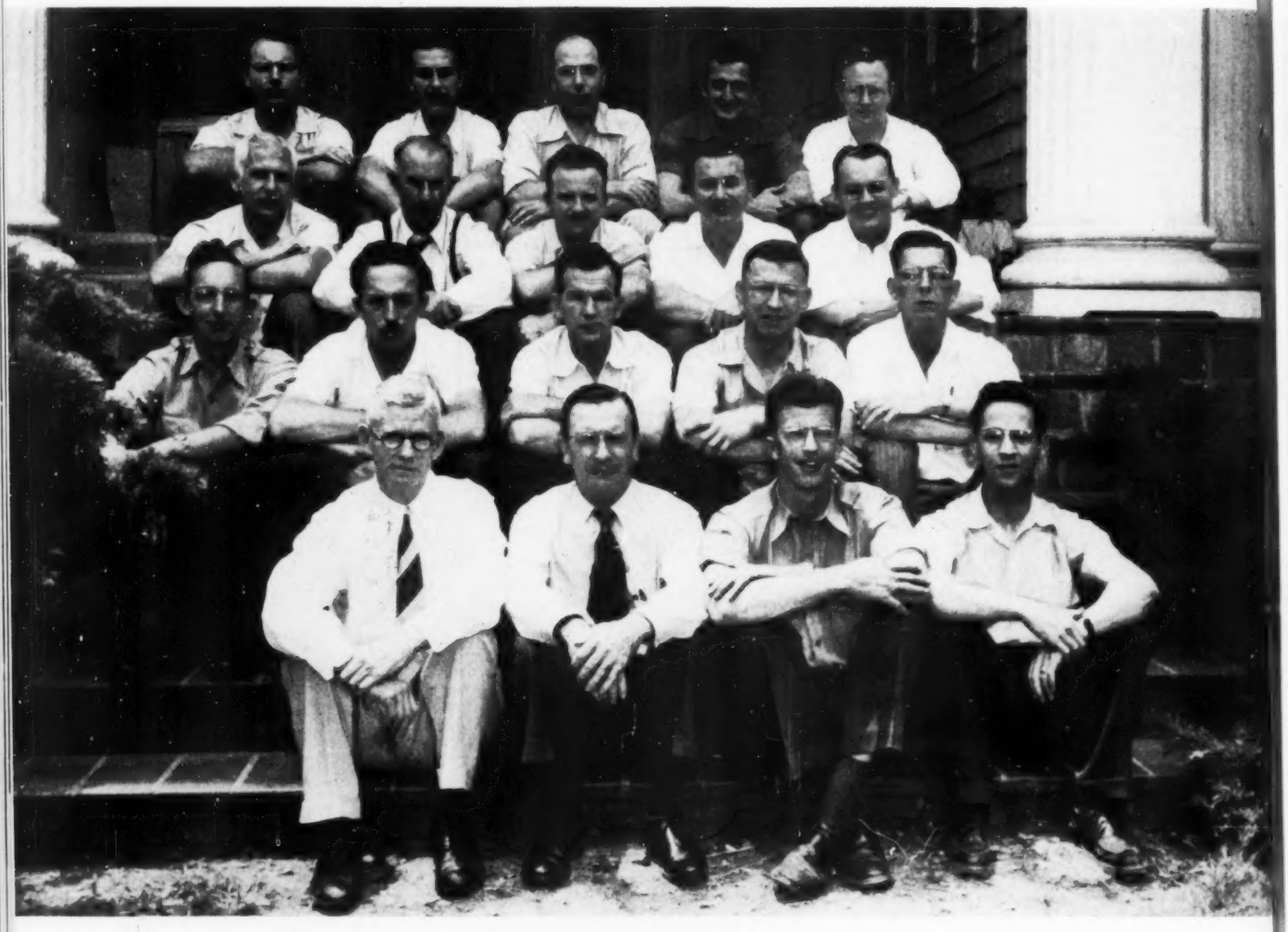
Another Irish landowner deeply interested in forestry is Lord Inchiquin of Dromoland Castle, in County Clare. On his demesne near Shannon he has established a nursery in which he grows thousands of seedlings of oak, beech, ash, sycamore, larch and sitkas. He is making a valiant effort to reforest denuded hillsides. On this estate are the famous beeches planted long ago in the pattern of a mighty cathedral. Not a tree is missing; each one stands symmetrical and perfect — truly a place for worship.

In his book, *The Irish Tangle for English Readers*, Shane Leslie has this to say about trees and Ireland: "Few people know how much the history of Ireland is the history of her trees. It was out of the moss-grown forests that all her immense past resources were formed, without which she would be fuelless today. While the great Munster and Ulster woods stood, the natives could defend and save themselves unendingly. In those woods were fought the first and most successful guerilla wars, for the Gaelic Irish were the first partisans operating a partisanship which overlapped the centuries. While the forests stood, Irish freedom remained. Perhaps it will not return until they are grown again."

Young's "Tour of Ireland" mentioned the aboriginal forest across this lake

American Sequoia were planted in 1860 near lake on Sir Leslie's estate

Educating the Educators



Federal, private consultants meet with Dixie education chiefs each year. Dana Parkinson, USFS Education Chief (lower left), attended 1948 parley

SOUND forestry without the backing of a bang-up educational program is like ham and eggs without the eggs. Forestry leaders down in Dixie have been aware of that for many years.

Charting a definite pattern for forestry education, however, has been a slow and sometimes painful evolution in the South. One by one the various state forestry agencies began to shoulder their responsibilities. Most of the southern states placed one man in charge of this highly specialized work.

This man had to be a combination journalist, forester, salesman, school teacher. In nearly all states he has been given the title of Information and Education Chief—or for brevity, I & E chief. In some cases these I & E men have a professional forester's background, others are ex-journalists, and yes, some were once school teachers. Their success depends upon an ability to become salesmen.

There they were. They had a title, and they had a job to do. They were expected to educate the people on good forestry practices—teach them the folly of allowing fire to ravage the timber, show them the way to good cutting practices, how to combat disease and insect attacks, the wisdom of reforesting idle acres.

Yes, it was a satisfying title, a whale of a job—but it had to be done on a mighty limited budget. What a challenge! The educators began to get an education. They are still getting it.

Hampered financially as they were,

By J. H. KITCHENS, JR.

Could your state forestry service afford $10,000 movies? Information and education chiefs in Dixie have learned how it can be done by pooling talents, sharing costs

each courageously tackled all the tried and tested educational approaches within his capabilities. Many of these efforts were "hit or miss"—executed the wrong way or on too small a scale to get the job done. Nevertheless, newspapers and radio stations soon were carrying more forestry news items.

By the close of World War II, however, state agencies throughout the South got down to cases and began to expand their educational efforts. Larger budgets were set up for educational work. The I & E chiefs took the bit in their mouths and began to launch into other approaches for reaching the people. Some swung to the use of visual aids, even made a start on a school program.

Getting into the field of visual aids meant more photographic equipment, slides, movie cameras, films, projectors, screens, exhibits to be built and countless other accessories. It also called for men trained in using these props in a way that would best get their forestry message across.

The school program further depended upon bulletins, circulars and other printed matter relating to forestry problems peculiar to a predominately southern pine region. Such material wasn't available elsewhere. The I & E chiefs found out in a hurry they would have to produce it themselves.

These educational materials cost big money. Several of the I & E chiefs began to see that it was an uphill battle for a single state to try to produce the necessary quantity of such publications with the funds which were available.

"There must be an easier and cheaper way," they said. From this idea came the present regional educational plan. Southern I & E chiefs met first at Jackson, Mississippi, in March, 1946. Since then, four meetings have borne fruit. Let's take a look at a few projects to see what happened.

Take publications — there are several hundred thousand children of school age in each state. Southern states were trying to produce school materials. Because the costs were staggering, they were never able to turn out sufficient quantities to be really effective.

Cooperative publications offered the only way of bringing unit cost prices down. Lower unit cost means greater distribution with the same money.

The Louisiana Forestry Commission printed its supplementary school book *Ten Lessons in Forestry*. Copies cost about thirty cents each. Thirty thousand were placed in the public school system. The southern group of I & E chiefs thought this material could be generalized to fit southwide conditions and printed in quantity to bring prices down. A special committee re-wrote the textbook and asked printers for bids on quantity production.

The result was a mass order from nine states totaling 150 thousand copies. The cost? Just under seven cents a copy! And the material was applicable in all the states involved. Statements were changed from, for example, "loblolly pine grows in Louisiana" to "loblolly pine grows in our state." Each state was given its own title page, its own message from the state forester, and a bibliography of materials available from various forestry agencies.

Good motion pictures are among the most effective means which can be used in teaching. But the South had very few good pictures dealing with forestry. So, southern I & E chiefs proposed to the U. S. Forest Service: "If the Forest Service will furnish a cameraman, director and script writer, plus full equipment, the states will agree to put up additional money to produce a cooperative picture on forest fire prevention."

The Forest Service came through; the states put up their share. The result was the best fire prevention movie yet produced—DEAD OUT. In color and sound, this how-to-do-it picture explains the proper methods of burning brush.

Comparing with the best in its field, the film's cost ran slightly under $10,000. But each state only paid about $250. How far would an individual state have gone in producing a $10,000 movie on its own?

And in the field of school education. A cooperative project—recently begun—will produce a children's color book at low cost.

Through arrangements made with the Government Printing Office, at Washington, D. C., it is possible to produce a sixteen-page color book of notebook size for about one cent a copy! Think of the number of youngsters who will be thrilled with this book and at the same time take a good message of forest fire prevention home to their parents!

There have been other cooperative projects. A committee on school-education has prepared a manuscript

(*Turn to page* 43)

Learning by doing is important in forestry education. Youngsters here help a Florida forest nurseryman prepare a seedbed for planting pine

Forests of New Mexico

Varied, interesting, vital. That depicts forested lands which cover nearly one-third of lofty and arid New Mexico

By JOHN B. WOODS

NEW MEXICO is a big and lofty country, interesting and in certain ways unique. For example, the present state was pieced together out of thre different additions to American territory—Louisiana Purchase, Mexican Cession and Gadsden Purchase, an origin enjoyed by no other "land grant state." It became a territory in 1850, but waited until 1910 for approval of its natural desire for statehood, and then made it with difficulty two years later, after some remodeling of its constitution.

New Mexico's recorded history goes all the way back to 1539, and much of this makes unpleasant reading because of Spanish cupidity and cruelty and equally persistent Indian retaliation. Repeated efforts by roving friars to convert the Indians to Christianity resulted in the liquidation of the friars, and culminated, in 1696, in a general rebellion among all the tribes. Yet shortly thereafter permanent settlement really began and, in the course of time, regular trade routes were established between this far-away country and the new American settlements of Missouri and Illinois.

Not the least interesting historical record is found in wood which long ago was placed by the aborigines in their dwellings. By plotting the duration of wet and dry cycles, and the comparative tree growth in each year within those cycles, it is possible to go back even beyond recorded history and recognize the logs in such structures by the sequence of their

This New Mexico plateau features forests and clear, cool lakes

W. H. Shaffer, USFS

F. S. Skipp, USFS

Sheep and cattle graze on the open range in New Mexico's national forests.

annual rings. From weather or climatic reports to fixing the dates of ancient dwellings is but a step, and in this manner trees have enabled man to trace Indian history, at least in its broader aspects, back to the time of Christ.

New Mexico is a vast plateau, highest in the north and west, cut across by the southward flowing Rio Grande, and its tributary San Jose, and by the Pecos farther east, which also debouches into the Rio Grande away to the south, in Texas.

The state is tapped as well by several stream systems which reach either the Gulf of Mexico or that of Lower California. The Canadian flows eastward to join the Arkansas and finally the Mississippi, from its origins in New Mexico's northeast corner. Both the Colorado and the Gila, one of that river's tributaries, have sources in the western counties. Between these streams the country is characterized by rows of sharp ridges or *sierra*, their names sounding like old Spanish descriptions of the wonders of Nature and the Church.

The area of New Mexico is slightly in excess of 77,767,000 acres, of which the 1940 Census reports 38,860,427 acres in farms. Such an optimistic recapitulation is somewhat misleading, since less than 5,000,000 acres are or can be profitably devoted to tilled crops, while 26,445,000 acres are no better than pasture, and practically all of the remainder is less farmable. The U. S. Forest Service estimates that 20,001,000 acres are wooded, either thinly or thickly, according to its supply of moisture.

Several mountain ranges are covered with timber; the forests on 3,465,000 acres are suitable for commercial use. Chief species are ponderosa pine, Douglasfir, true firs and spruce, in that order of volume and importance. Pinyon pine and cedar are abundant in the foothills, while east of the Pecos River there are large areas of mesquite. Along many of the streams are cottonwoods, willows, and occasionally sycamores.

Saguaro, or giant cactus, is a feature of the southwestern desert, while another dry land plant of tree size, the yucca, is likewise widely distributed. Thus it appears that the state, for all its scanty 14.43 inches of yearly precipitation, supports a varied and interesting forest vegetation. Incidentally, it is worth noting that most of this rain comes during the period May to August.

Large areas of lightly timbered land are in public ownership, but other considerable acreages are held by the Indians, while still others are in private hands. Something over 700 thousand acres are classed as commercially valuable, but are withdrawn from such use and held for public enjoyment, in parks and pre-

(*Turn to page* 46)

C. D. Hardaway, USFS

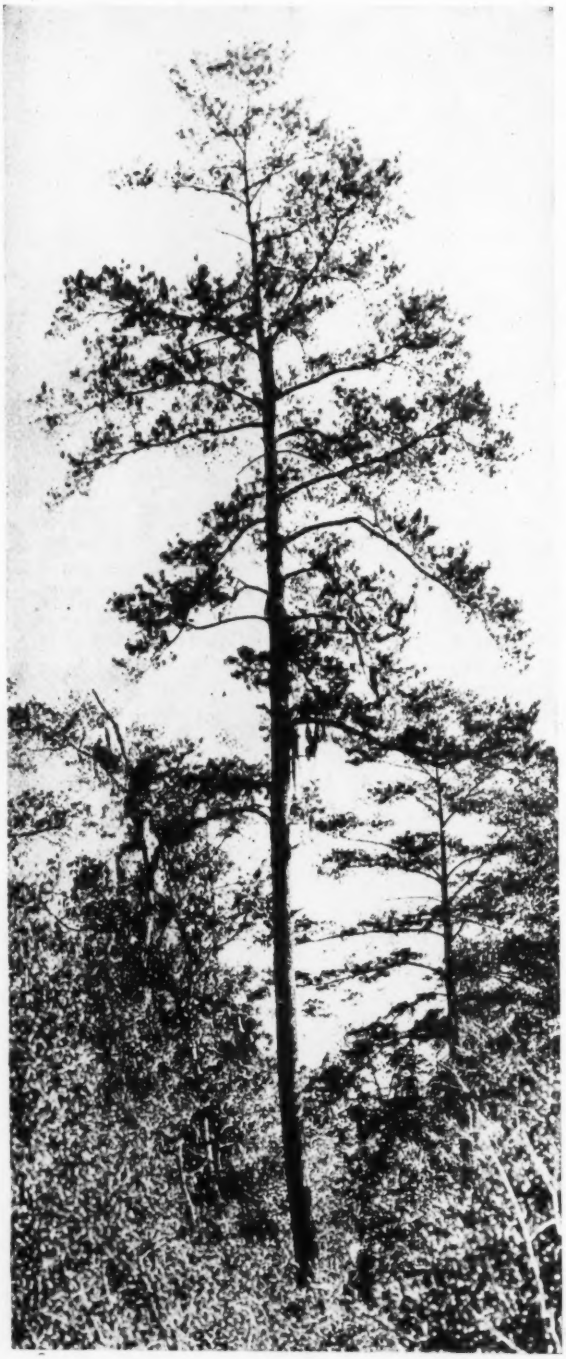
Profitably tilled agricultural lands surround the Carson National Forest in northwestern New Mexico. Five million acres of this type stabilize economy

KNOWING YOUR TREES

SPRUCE PINE

Pinus glabra, Walter

By WARREN D. BRUSH



Chicago Museum of Natural History

Spruce Pine is a medium-sized tree, eighty to ninety feet high, with spreading branches and narrow crown, which sometimes grows to a height of 120 feet

SPRUCE PINE is one of the less important yellow, or hard, pines of the Southeast. It usually occurs singly or in small groups, never forming pure stands over any large area. Largely confined to the coast region, it grows in southeastern South Carolina, southern Georgia, Alabama and Mississippi, western Florida and extreme eastern Louisiana.

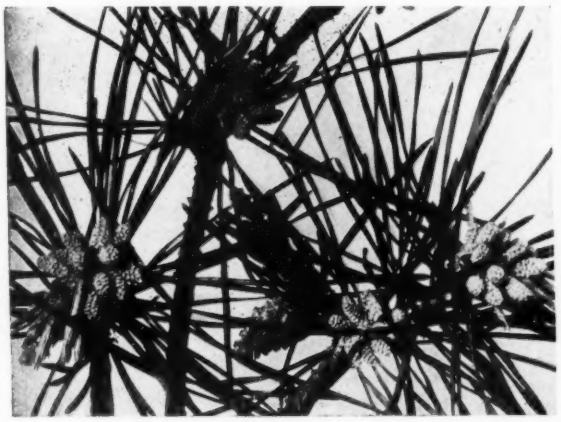
Requiring a moist soil, spruce pine commonly occurs along rivers, especially on low terraces subject to overflow. It seems to require a warm, humid climate for its best development. Sometimes it is found mixed with shortleaf and loblolly pines. Nowhere abundant, it is of greatest economic importance in western Florida where it is common over areas of considerable extent and attains its largest size.

While usually a medium-sized tree eighty to ninety feet high and two to two and a half feet in diameter, it has been known to attain a height of 120 feet and a diameter of three and a half feet. The bole is commonly unsymmetrical with much taper, and the limbs formed along the trunk persist until the tree is nearly mature. The limbs are horizontal, dividing into spreading branches, and the crown is comparatively long and narrow. The slender, flexible branchlets, light red and tinged with purple at first, ultimately become dark reddish brown. The sharp-pointed buds have brown scales with whitish matted hairs on their margins.

On young trees and on the limbs and upper trunk of older trees, the bark is smooth and light gray in color. On old trees, it is from one-half to three-fourths of an inch thick, and irregularly divided by shallow fissures into flat, connected ridges broken into small, thin, closely appressed, light reddish brown scales. The specific name, *glabra*, meaning smooth, is well-used in describing the spruce pine, since its smooth bark readily distinguishes it from other pines within its range.

The soft, slender, dark green needles, from one and a half to three inches long, occur two to a bundle. They are sharp-pointed. At the end of their second and in the spring of their third year they fall from the tree. The male or staminate flowers are yellow and grow in short, crowded clusters at the base of the twig, while the pistillate are purplish and are borne on slender, slightly ascending stems at or near the ends of the twigs.

Spruce pine has the smallest cones of any of the eastern pines. They measure from one half to two inches long, are nearly spherical or somewhat egg-shaped, and are on short, stout, bent stalks. They are reddish brown and open and shed their seed soon after ripening. Each thin,



L. W. Brownell

Dark-green needles are slender and sharp-pointed. Male flowers are yellow — the pistillate purplish

L. W. Brownell

The egg-shaped cones, the smallest of any eastern pines, are from one-half to two inches long

slightly concave cone scale is armed with a minute, weak, erect prickle, which is usually deciduous. The seeds are nearly triangular, about one-eighth of an inch long, with a thin, dark gray shell mottled with black, and thin, delicate wings five-eighths of an inch long and one-fourth of an inch wide.

Although classified botanically as a hard pine, the wood is light in weight, moderately soft and weak. The heartwood is light brown—the thick sapwood nearly white. Although the tree is not well adapted for conversion into lumber, because of its poor form and rather small size, sawmills sometimes segregate the lumber and sell it to manufacturers of sash, doors and interior finish for which it is very suitable, but it is being used increasingly for pulpwood along with other southern pines. However, its principal use is for fuel. Other names applied to it are cedar pine, poor pine, Walter's pine and bottom white pine.

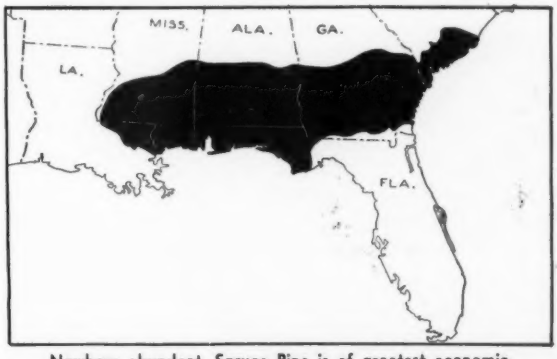
Spruce pine is a tree of very rapid growth, attaining an average diameter of from four to four and a half inches, and a height of thirty-five feet, in twenty years. Although fully grown at about seventy-five years, it may live to an age of 150 years or more. It thrives and propagates in the shade and will even crowd out other trees by the rapidity of its growth. Seed is produced abundantly at an early age, often at ten years. The seed germinates best in half shade. Under favorable conditions, it will reproduce and take possession of cleared land and abandoned fields.

Its natural habitat on low, moist land largely protects it from fire. The wood is not highly resistant to decay, however, and overmature trees often have heart rot which extends from the butt to the top.

Occasionally planted as an ornamental tree because of its attractive form when young and open grown, it is not hardy in cultivation except in the South.

L. W. Brownell

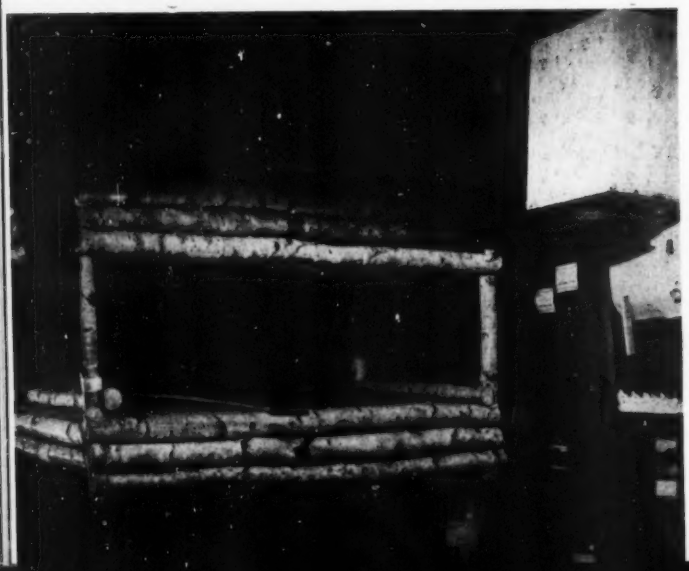
On old trees the bark is divided into flat ridges, broken into small, thin, light reddish brown scales



Nowhere abundant, Spruce Pine is of greatest economic value in western Florida, where it is most common

An average 35,000 tourists visit the logging museum at Rhinelander, Wisconsin, each summer

Above, the museum cook shanty ready for chow call. Below, these bunks looked inviting to tired loggers



Lumberjacks'

"HALL OF FAME"

By C. J. PAPARA

VISITORS to northern Wisconsin next summer would find it profitable to drive to Rhinelander and spend an afternoon in the logging museum built by the town's citizens in 1932 as a memorial to lumberjacks. The museum opens on Memorial Day of each year and closes on Armistice Day.

It has been many years since Wisconsin was "King Lumber" and the hoarse cry of "Timber!" reverberated through the Badger State's great pine forests. But those fabulous days are still green in the minds of thousands of people due to this well-organized logging museum that yearly draws around 35,000 visitors. This lumberjacks' "Hall of Fame" is justly celebrated for its wealth of old-time logging equipment and the historical perfection and accuracy of its exhibits. Any old lumberjack would feel perfectly at home in it.

Plans for the museum got under way prior to 1932 when the Rhinelander Abner Dahlberg Post, American Legion, adopted a suggestion by J. D. Mylrea, president of the Thunder Lake Lumber Company, that the building be constructed and dedicated to all lumberjacks. Mr. Mylrea offered to furnish the lumber for the structure.

Rhinelander citizens and industries enthusiastically supported the project and a special committee obtained the services of Malcolm McEachron, an expert on bunkhouse and cook shanty construction, who directed the erection of a long, low museum building of Norway pine. The building is an exact replica of the cook-and-sleeping type shanty used in the Rhinelander area until the turn of the century.

With an authentic building under way, committee members toured much of northern Wisconsin obtaining relics of lumbering era lore. Few homes and wood products establishments were missed in the search and the result was an excellent collection of equipment including pike poles, peavies, stamping hammers, mess equipment, bunks, pots and pans and even washstands from former lumber camps.

The cook house and sleeping shanty are authentic in every detail, with the cook house set up ready for the call of "come and get it" that always brought the calk-booted 'jacks on the run. The sleeping bunks may not look very comfortable judged by present-day standards, but the lumberjacks considered them inviting after fourteen hours of working in the woods.

A feature of the museum is an obsolete locomotive known as "Seven Spot." Built in 1879, it was brought to the Rhinelander area originally by a Michigan logging firm, and used for years in hauling logs to the mills—until wider gauge engines came into vogue. It was given its name because it was the seventh engine the company owned.

The museum caretakers are Mr. and Mrs. Leizime Brusoe, who keep the environs neat and clean and enjoy their task of explaining the various exhibits to the thousands of individuals who visit the property every season. Visitors to the museum next summer may be sure of a welcome from Mr. and Mrs. Brusoe.

WILDERNESS RETREAT

By EDNA PARRISH ROUSSEAU

THE housing problem is no worrisome obstacle to members of the Potomac Appalachian Trail Club. With an appetizing zest they buy materials and build their own. Tackling a tough job sweetens their dispositions.

The Hermitage, their latest achievement, was dedicated on October 10, 1948. This most recent addition to the chain of cabins placed at strategic points along the famous Appalachian Trail that follows the crest of the mountains from Maine to Georgia, is in one of the wildest sections of the Michaux State Forest in Pennsylvania — seventy-five miles from Washington, D. C., close beside a cool clear stream, steeped in shadow and silence, with the play of the sunlight on the ridges farther up.

A chimney, found standing there, was the determining factor in the selection of the site. A sturdy stone chimney with a wide open fireplace was the only remains of a burned cabin once used as a retreat by forestry students of the Pennsylvania State College. As soon as he saw it, Ambrose H. Stang, chairman of Shelters Construction, settled down to serious and convincing talk. A chimney is not all mortar and stone. It carries a nostalgic influence. And this one was as good as new, with an age-old look.

It took one year to built the Hermitage. There were fifteen major work trips on which twenty to forty zealots labored one, two, or three days. That they were not required to punch a time clock was a happy feature. Besides, they could stop any time they wished for a breathing spell or a cup of fresh spring water.

Each trip was highlighted with colorful events. Take that first one, for instance, the second weekend in September 1947. It was late Saturday morning when the red truck came to a stop and everyone began tumbling out the rear end, unloading duffle, knapsacks, camping equipment, and all sorts of building implements.

The terrain was rugged and very rocky. It was difficult to find ground-surface smooth enough for tents.

A warning was issued to look out for rattlesnakes. Shortly thereafter, an excited summons brought help on the run. A big coiled reptile slowly unwound itself and made a futile effort to escape.

Soon commercial trucks began delivering sand, cement and lumber. With everyone lending a hand, all this material arrived by tote method at the top of a rocky ledge some 250 yards away. Thence, it was lowered piecemeal to the shelter site, swinging from a 240-foot steel cable slung between the eighty-foot cliff and a tree next to the chimney.

The cook crew's turn came late in the afternoon. Raking up a neat little mound of brush and dead leaves, then placing several sticks of wood on top, a match was applied. The leaves crackled and leaped into flame. A bucket of water was hung over the fire. The bucket was bright and shiny and reflected the yellow glow. Others gathered about, lured by the prospect of food and coffee. Viciously the fire exploded—like a volley of pistol shots. Burning fragments flew in all directions. Water started dripping on the fire from holes punctured in the bottom of the bucket. One bystander was hit in the forehead. Two others received arm wounds. Painful but not serious. A careful search among the leaves revealed a number of dynamite caps.

Months passed—fall, winter, spring, summer. The structure grew. Skilled workers could not have done a more thorough, careful, or better job.

The scenes in this isolated region shift easily. Each day is endowed with its own peculiar charm and circumstance. Always there is the feeling that any minute something wonderful may happen.

Daylight was fading when an old-timer with one last broad swing of his ax left it sticking in a log. Crossing over, he dropped quietly down beside the others near the cabin for a rendezvous with dusk, exhausted but somehow purified. It was a lovely day and the hills were tinted with russet and gold. As a great star faces an audience, a whippoorwill perched upon the handle of the ax and lifted its voice in a beautiful serenade.

The Hermitage, built this fall by members of the Potomac Appalachian Trail Club in the Michaux State Forest of Pennsylvania

HEAD START *on spring logging*

HERE'S winter going down for the count before the punch of a "Caterpillar" Diesel D7 Tractor equipped with a No. 7A Bulldozer. Used by the Cascade Lumber Company, Ellensburg, Washington, on its operations near Cle Elum, it's smashing through snow 4 to 7 feet deep to give them a head start on spring logging. Singlehanded, it cleared four miles of road in two days—and that's good going.

Note how the blade rolls the snow ahead of it. This rolling action, an outstanding feature of "Caterpillar" Bulldozers, provides great capacity with maximum fuel economy in moving a wide range of materials from snow to earth.

"Caterpillar" Diesel Tractors and "Caterpillar" Bulldozers make a perfectly matched unit because they are designed and made by the same manufacturer for use together.

As a matter of cold figures, "Caterpillar" outfits have proved themselves year-round money makers in the woods. They are standard equipment for building roads, constructing fire trails and handling all the clearing and rough grading around the job.

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WASHINGTON LOOKOUT

By A. G. HALL

Among the many new faces in in the 81st Congress now assembling in Washington is an old familiar one —that of Representative John McSweeney of Ohio, co-author of the McSweeney-McNary Act of 1938, which laid the groundwork for present-day federal research in reforestation, timber growing, protection, utilization and forest economics.

Among the missing faces is that of Senator Edward V. Robertson of Wyoming, defeated in the November election by Lester C. Hunt. Foe of the Jackson Hole National Monument, Senator Robertson's defeat is making it possible for National Park administrators and supporters to breathe a bit easier.

Also missing from the Congress is Charles Russell who was caught in the Democratic landslide and defeated by the slim margin of 800 votes as representative-at-large from Nevada. Representative Russell was one of the broader-gauge men on the House Public Lands Committee in the 80th Congress. Although a member of the Barrett sub-committee which conducted the "investigation" of western range administration, he took no part in what has been termed an attempted "smear" of the U. S. Forest Service. On the contrary, in his state he insisted that both sides of the range story be given equal opportunity for presentation. He also introduced the bill to put to work the unobligated balance of more than $13,000,000 in the "federal-aid-to-wildlife-restoration fund." He had hoped to reintroduce it in the 81st Congress.

President Truman has asked his executive departments to submit programs, budgets and suggested legislation. And this has Washington wondering. Is it a cue to extension of federal controls?—and will they extend into the conservation field?

And how will the departmental and presidential program fit into the report of the Hoover Commission? Anyone's guess. But President Truman, in a letter to Herbert Hoover, chairman of the Commission on the Organization of the Executive Branch of the Government, indicated that he would support the commission in its recommendations. Meanwhile, there is a whispering campaign for the "defeat of Hoover" among those who do not know or who choose to ignore the history and purpose of the commission.

Although established by a Republican congress, the commission is truly bi-partisan. The legislation setting up the commission was endorsed by President Truman, passed by both Houses of Congress without a dissenting vote. It is made up of twelve men, four appointed by President Truman, four by the President of the Senate, and four by the Speaker of the House. Further, each group of four appointees consists of two Republicans and two Democrats, two from government and two from private life. Herbert Hoover was not appointed as chairman, he was elected by commission members. Its report and recommendations must be made within two weeks after the Congress convenes and must be acted upon by the Congress within sixty days.

The forestry phases of the report will be covered in the February issue —but what will happen to the recommendations will depend upon how and how soon a major portion of the American people interpret them and let their reactions be known to their legislative delegations.

Doubtless the report will have its effect upon legislation designed to streamline federal work in conservation. The Hope Bill for the realignment of agencies dealing with the management of public lands and assistance to private landowners didn't get beyond the hearing stage in a Republican congress, although Representative Hope was chairman of the House Agriculture Committee. He will relinquish the chairmanship of that committee to Democrat Harold D. Cooley of North Carolina, who has indicated his interest in centralizing a number of independent agricultural units under the Extension Service in the Department of Agriculture.

IMPORTANT ANNOUNCEMENT

This issue introduces a new feature, THE WASHINGTON LOOKOUT—an analysis of important legislative and governmental developments in the broad field of conservation, by A. G. Hall, forester for The American Forestry Association. It replaces the feature CONSERVATION IN CONGRESS.

As a part of this new service to AMERICAN FOREST readers, Mr. Hall will issue special bulletins on conservation bills and proposals in federal and state legislatures. If you wish to receive these, merely send your name and address to The Forester, The American Forestry Association, 919 Seventeenth Street, Northwest, Washington, D. C.

The four southern gentlemen who last year introduced bills to increase federal-state funds for forest fire control under the Clarke-McNary Act have all returned to Capitol Hill. Senator Ellender of Louisiana, and Representatives Allen of Louisiana, Pickett of Texas, and Sikes of Florida, all Democrats, brought their bills to hearings in the 80th Congress.

In order to swap ideas on conservation problems and to be better prepared to meet conservation problems in 1949, members of the Natural Resources Council of America, a group representing major organizations in conservation, met with Secretary of Agriculture Charles F. Brannan on December 1 and 2. Entirely "off-the-record" probing into Agriculture's policies and programs gave the group a high regard for the Secretary and his top-side staff.

The Food and Agriculture Organization of United Nations is looking toward greater development of forest resources, world-wide, through regional attacks on the problems. A forestry and products commission for Latin America is planned, similar to that in Europe, to make studies and recommendations. FAO is sponsoring the Third World Forestry Conference in Finland in 1949, and will hold a Far Eastern Forestry Conference.

While in Washington, the FAO forestry group took a quick look at experimental work of the U. S. Forest Service at Beltsville, Maryland. Among other things, were hybrid poplars making startlingly rapid rapid growth and showing increased resistance to disease. The experimenters are working with just a handful of cuttings and at the present rate of progress it will be years before they can be positive about results—that is, positive enough to warrant advocation of extensive plantings. More technicians are needed, which, translated into budgetary terms, means more funds.

Here we have the U. S. Government, the biggest business in the world, investing pennies in experiments which might revolutionize the

pulp and paper and wool cellulose industries and put thousands of acres of non-agricultural land really to work. On the other hand, L. F. Livingston of the E. I. Dupont Company of Wilmington, Delaware, recently told a group of Washington foresters that DuPont invested $43,000,000 in nylon research before marketing a thread of the material. Cellulose is the basis of nylon.

National forests last year yielded three and three-quarter billion board feet of timber—sales to loggers and mill operators. Total harvest from all federal lands was more than five billion feet—more than thirteen percent of the nation's total lumber cut. It is assumed that good forestry practices were followed by the government agencies.

What about the practices on the lands where the other eighty-seven percent of the harvest was made? Federal foresters estimate that around thirty percent of the larger timber holdings are managed with a view toward adequate future growth of desirable species—but that only five percent of the small holdings fall into the "good or better" classification. The small timberlands constitute three quarters of the privately-owned commercial forests. Yet, we have only 160 to 170 farm foresters on the ground to assist them in solving their timber problems. It is not expected that the Budget of the United States will provide for more than this token number in 1949-1950.

Look for a reopening of the Olympic National Park question in 1949. The Chamber of Commerce of the United States has voted to urge Congress to reduce the size of the park by eliminating the heavily timbered fringe areas and returning them to the Olympic National Forest, where they would be available for logging. This action is based on the belief that the future economy of the region will be strengthened without damage to the park. Supporters of the park program do not agree.

Another bill on the expected list is that of Representative Lemke of North Dakota, to open the national forest areas of Alaska to settlement by war veterans, a prospect most disturbing to the Department of Agriculture. Not only would it upset Forest Service plans for development of forest industries and forest management, but it would interfere seriously with plans for the orderly settlement of Alaska now being developed jointly by Agriculture and the Department of the Interior.

NEWS IN REVIEW

Forest fires on national forests of the country decreased twenty-eight percent in number and thirty-five percent in acres burned during 1948, the U. S. Forest Service has announced. Major factors were favorable weather conditions and a drop in the number of man-caused fires. This is all the more significant in view of a record year for campers, fishermen, hunters and other recreationists.

A state constitutional amendment that enables the legislature and State Board of Forestry to issue bonds to finance "state forest rehabilitation, reforestation and acquisition of lands," was approved by Oregon voters at the November 2 election. This was the second phase of a two-part program initiated in 1947.

The first phase, already approved, places a five-cents-a-thousand levy on forest products harvested in the state, sixty percent of which go to the forest products laboratory at Oregon State College, the remainder to the State Board of Forestry for research in forest rehabilitation and management.

The November amendment makes it possible to issue bonds not to exceed three-fourths of one percent of the total state assessed valuation for carrying out a long-range program of restoring state forest lands to the productive condition planned. This would make available around $10,500,000. State-owned forest lands in Oregon total 450 thousand acres. About half of this area is in need of rehabilitation treatment.

The bonds will be retired, first, from forest products revenue from state lands and, second, from general taxation.

What will probably be the most extensive study of big-game animals ever made under fully controlled conditions will be undertaken soon by the Idaho Cooperative Wildlife Research Unit, according to the Wildlife Management Institute. Study will be confined to white-tailed deer—and 1,000 acres of cutover white pine forest will be enclosed by a deer-proof fence for the project.

Studies to be undertaken include seasonal browse use in relation to nutritional values; development of techniques to evaluate big-game range; and weights and measurements of deer.

On January 1, Dr. A. D. Folweiler of Natchitoches, Louisiana, became director of the Texas Forest Service, filling a post vacant since the resignation of W. E. White early last year.

The new director has been associated with International Paper Company since 1946. During the war he served in the military government branch of the Army's Engineers Headquarters, and prior to that was associate professor of forestry at Louisiana State University. A native of Pennsylvania, he holds degrees from the School of Forestry, Pennsylvania State College, the Yale School of Forestry, and the University of Wisconsin.

State Forester C. H. Coulter of Florida, has been authorized by the State Board of Forestry and Parks to recommend to the 1949 legislature an increase of $800,000 in the annual forestry appropriation. This would permit establishment of fire control units in eighteen new counties. The current appropriation is $495,000.

Production of paper and paperboard in this country probably will reach 22,250,000 tons in 1948, the Department of Commerce reports. This is an all-time record—approximately 1,220,000 tons more than was turned out in 1947.

Charles A. Gillett—named managing director of AFPI

Announcement was made on December 15 of the appointment of Charles A. Gillett as managing director of the American Forest Products Industries, Inc. He succeeds Chapin Collins who resigned to resume publication of his newspapers in the State of Washington.

Gillett for the past several years has been AFPI chief forester, directing its "Keep America Green" campaign. Previously he served as forester for the Seaboard Air Line Railway, and as state forester of Arkansas.

It was also announced that Sydney Ferguson, Mead Corporation, Dayton, Ohio, had been re-elected president of AFPI, and William B. Greeley of Port Gamble, Washington, chairman of the board of trustees.

A process for making edible sugar from wood has been announced by Professor O. V. A. Woorinen, director of Finland's State Institute of Technical Research. Previously, sugar could be derived only for industrial uses, such as the manufacture of alcohol and yeast.

Wisconsin game does more damage to trees than forest fires, claims Ernest Swift, conservation director of that state. Although Wisconsin annually plants fifteen million young trees, deer destroy or damage forty times that much young forest growth, he says. A year ago fire damaged only one out of every 500 acres of Wisconsin forests, while one out of five forested acres was damaged by deer and snowshoe hares. This indicates annual damage to commercially important forest growth of approximately 650 million seedlings.

The U. S. Forest Service has announced completion of surveys of timber resources on sixty-three million acres of forest land in twelve states and the re-inventory of an additional forty-eight million forest acres in eight other states. Publication of the data by states and counties is now in process.

Canadian officials estimate that $100,000,000 of *net* tourist dollars was spent in Canada by Americans during 1948. That's more than $8 per capita for every man, woman and child in the Dominion.

Easy Handling and Fast Cutting

ARE FEATURES OF NEW McCULLOCH CHAIN SAW

A trial run with a McCulloch chain saw is a satisfying experience no forester or tree surgeon should miss. It's amazingly light (the entire power unit with transmission weighs only 38 pounds) yet it has so much *reserve* power that the average-weight man *can't stall it in a cut.*

The McCulloch has the exclusive Rip-Cross chain, which cuts rapidly in *any* kind of wood. The Rip-Cross chain *never* needs setting, and is easily sharpened by *hand* filing *without* removal from the blade.

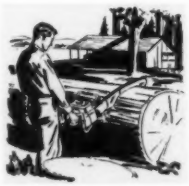
The McCulloch has many more special features of real interest to you. Send for detailed data on this modern wood-cutting wizard.

CLOSE FELLING saves dynamiting or bulldozing, and conserves wood. The McCulloch blade swivels 360°, permits cutting almost to the ground level.

LIMBING IS EASY AND SAFE. The light weight and automatic clutch permit safe handling up in the tree. The special McCulloch engine operates in any position. The Rip-Cross chain slices through knots, burls, roots, etc.

RIPS ANY WOOD. The direction of the grain or the type of tree is immaterial with a McCulloch. It cuts straight, clean, and fast in *any* direction.

BUCKS RAPIDLY and is so light that underbucking is convenient. The outboard handle detaches instantly, enabling the blade to be pulled through a cut when necessary.



20-inch Chain Saw...$385.00

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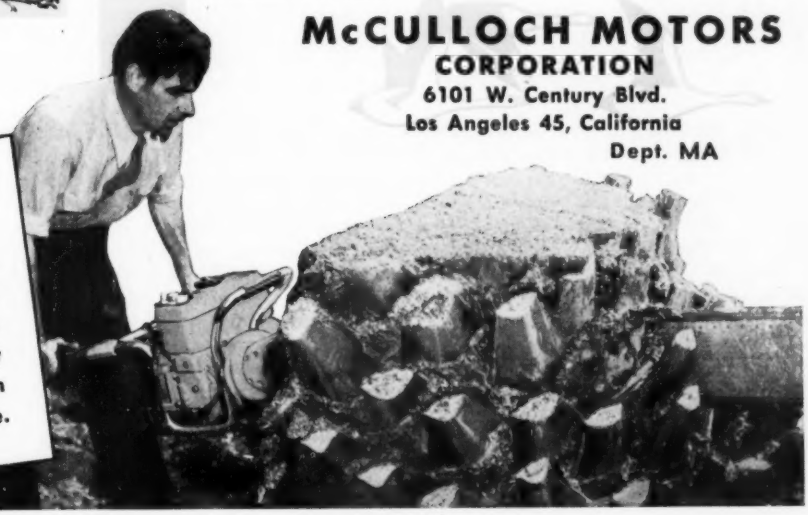
HERE IS AN ACID TEST!

Palm is a miserable, frustrating wood for a chain saw to encounter. The McCulloch, with its exclusive all-purpose Rip-Cross chain, will not only cross-cut palm but will even rip it rapidly, as shown here.



Skiing for Everybody

(*From page 9*)

new or improved water systems, sewage disposal systems and timber thinning for trails. Line-ups at toilets, for example, are a distressing but not uncommon sight at some centers.

National forest and park officers anticipated what was coming even before the war and tried to get ready for it. Acres of blueprints for proposed winter recreation development were turned out—all for the convenience of the average skier. Unfortunately, the farsightedness of the foresters and park men has not been reflected by Congressional budget appropriations for recreation. And there's a limit to what field men can do unless money is provided.

Immediately after the war there was sharp criticism of public lands officials for failing to provide all the facilities considered necessary. This griping was by people who were totally unfamiliar with forest and park policies and who had no conception of the budget restrictions hampering officials who for years have been all-out for skiing. Apparently, the critics expected the officials to wave some sort of magic wand overnight and convert large chunks of public domain into glittering ski resorts. The criticism took on a particularly sharp tone in California where swelling crowds of skiers have topped the one million mark.

Both the tone and the type of criticism of public officials have dwindled as sportsmen discovered the true picture, learned that their best plan was to work with, not against, sympathetic park and forest officials. One group that has proven especially effective in shaping up skier public opinion has been the Public Lands Winter Sports Committee of the National Ski Association.

"Now hold your horses," this newly-organized committee told its members in effect back in 1946 when the clamor for immediate expansion reached a new high. "We are dealing here with bureaus of long-established policies which are based upon experience. The proposals made by any small group seeking concessions must fit into a large administrative framework. And where there are any points in dispute, we've got to know what is back of them and consider both sides. No wild flurry of protest is going to get anybody any place."

Accordingly, skiers started getting down to brass tacks on basic needs. They were surprised to learn that some of their strongest support stemmed from agencies that previously had been the objects of their criticism.

This year the committee, now headed by Fred H. McNeil of the *Oregon Journal*, at Portland, has turned in one of the most constructive jobs of clarifying ski opinion to date, namely the questionnaire it submitted to more than 300 ski clubs within the orbit of the National Ski Association.

Replies received from seventy-two clubs showed, surprisingly enough

even to association officials, that forty-seven clubs favored authorization by Congress to collect fees for use of improved recreation facilities and administration of national forest land. Such funds as are collected (an annual fee of $1 a person was suggested) would be ploughed right back into the areas that provided them. This proposal, if approved, would materially help the situation.

Replies to other questions indicated there are many potentially good ski areas not now being utilized in the nation, with the Mineral King sector of California the most frequently mentioned; that federal supervisory officers in a majority of areas are sympathetic and cooperative toward winter use by the public; that lifts, tows, restaurants, shops and lodgings sufficient to meet needs are lacking in practically all areas; that between ten and twenty percent of the total winter sports visitors to resorts are not skiers; that in most cases access roads and parking areas are cleared of snow adequately; that safety factors should be strengthened in many areas; that more medical service should be provided; and that the National Ski Patrol should be reinforced.

These replies, and many more in the questionnaire, are concrete expressions of opinion by people who know the score and, as such, provide meat for officials working to improve skiing conditions generally. Slowly but surely skiing's pioneer leaders are forging a chain of documentary fact to prove that the "ski crowd" is entitled to the same type of consideration as the "hunting crowd" or the "fishing crowd." And skiers are beginning to learn the ropes on how to go about getting help. Where they used to stew at anyone handy when conditions did not come up to snuff, they now lodge their requests with their duly elected representatives in Congress.

The day is fast approaching when skiers will walk into the appropriate congressional hearing rooms and say in effect, "You did this for the fishermen and that for the hunters. How about us?" And they are not likely to come away empty handed—not at the rate their closely-knit groups are expanding.

When funds are forthcoming for winter sports expansion it won't find the various governmental administrative agencies concerned unprepared. The U. S. Forest Service—which sees skiing fitting right into its multiple-use system like a glove—has been ready for a long time.

Administratively, the Forest Service has already done a bangup job of operating existing ski slopes with what it had on hand. Few people realize what a tremendous undertaking it is. There are weather reports to be sent out, roads to be kept open, special use equipment to be checked, accident prevention and first-aid, sanitation problems—all the responsibility connected with looking after thousands of visitors in mountain areas.

But as John Sieker, Forest Service chief of the division of recreation and lands, says, "We couldn't do it alone. We rely heavily on the National Ski Patrol and the various state highway and state police units to keep roads open and traffic moving." To this, Forest Service field men such as Supervisor Koziol of the Wasatch and W. S. Davis of the Rocky Mountain Region, say "Amen."

Personnel of both services are taxed to the utmost to carry their present winter programs. The National Park Service handles the entire show itself on its seven principal

(*Turn to page 46*)

FARM MANAGEMENT by John D. Black, Marion Clawson, Charles R. Sayre and Walter W. Wilcox. Published by The MacMillan Company, New York City. 1073 pages, illus. Price $5.50.

A textbook intended primarily for use in agricultural colleges, this volume shows how to apply science and economics to the successful management of agricultural land. The authors each have specialized in regional farm management problems—one is from the Northeast, one from the Great Plains and the West, one from the South and one from the Midwest. Consequently, they have put together a text suitable for use in all parts of the United States.

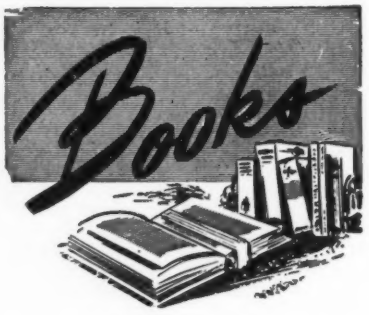
Major portions of the book are devoted to systems of farming, principles and methods of analysis, management problems in various types of farming. Thus the book avoids laying down "rules for successful farming"; rather, it provides the principles of analysis that a farmer must apply to his own situation. The object is to teach the agriculturist how to think through his problem and apply his knowledge of the sciences to its solution.

THE LAND AND WILDLIFE, by Edward H. Graham. Published by Oxford University Press, New York City. 232 pages, illus. Price $4.

An abundance of wildlife does not result from jurisdiction, sportsmen's meetings, or bureaucratic dictates, says the author. Rather, it results from what we do with the land. Emphasizing that the most practical wildlife management is accomplished through good land use, the book describes land-use practices, indicates how they fit into wise use, and explains what they mean to wildlife populations.

HARNESSING THE EARTHWORM, by Thomas J. Barrett. Published by Bruce Humphries, Inc., Boston, Massachusetts. 184 pages, illus. Price $2.50.

This is a practical study of soil-building, soil-conditioning and plant nutrition through the action of earthworms. Instructions are given for intensive propagation and use of domesticated earthworms in biological soil-building. Every worm is a miniature "mill" for the production of topsoil; the author considers the earthworm the most important animal in the world. The book tells how you can put it to work.



THE RUFFED GROUSE, by Frank C. Edminster. Published by The Macmillan Company, New York City. 385 pages, illus. Price $5.

Three times since the turn of the century the ruffed grouse has been threatened with extinction. During the most recent decline which reached serious proportions in 1927, the author engaged in a thorough investigation of this woodland game bird. From this experience and from his widespread game management work in the Northeast, the author has brought together a most complete study of the life story, ecology, and management of the ruffed grouse in a manner interesting to the sportsman, the nature lover and the lay reader. At the same time, it is accurate and well documented for the use of technicians.

OUR LIVING FORESTS, by Joseph T. Hazard. Published by Superior Publishing Company, Seattle 1, Washington. 302 pages, illus. Price $4.

A story of the forests and their multiple use, this very readable book recounts the changes that have taken place in our forest scene from the ruthless early days of short-sighted exploitation to the changing scene toward enlightened forest management. Particular emphasis is given to the Pacific Northwest and the Pacific Slope.

POSTGLACIAL FOREST SUCCESSION, CLIMATE, AND CHRONOLOGY IN THE PACIFIC NORTHWEST, by Henry P. Hansen. Published by The American Philosophical Society, Philadelphia, Pa. 130 pages, illus. Price $2.25.

As the retreating ice left the Pacific Northwest of the glacial period, it left in its wake many lakes and ponds. Even beyond the limits of glaciation other lakes and ponds were formed by geomorphic and climatic cycles. These lakes now provide a textbook of historical information to the student who can read the story told in the sediments, particularly in the pollen which settled year after year in the lakes and on the bog surfaces. Professor Hansen's monograph is the result of pollen analyses throughout the region, through which he has been able to trace the climatic and other factors and their effects on forest growth and succession.

TRACKS AND TRAILCRAFT, by Ellsworth Jaeger. Published by the MacMillan Company, New York City 11. 381 pages, illus. Price $3.95.

This book should be a source of fun as well as study for the woodsman, the casual visitor to the forest and field and to youth organizations in planning hikes and camps. It gives the story of tracks, profusely illustrated with clear line drawings, from those now found only in fossil form to those of present-day mammals, birds, amphibians, reptiles, crustaceans, mollusks and insects.

PRAIRIE WINGS, by Edgar M. Queeny and Richard E. Bishop. Published by Ducks Unlimited, New York City. 256 pages, illus. Price $15.

This is an unparalleled collection of flight studies of migratory birds from the pen and camera of Edgar M. Queeny with explanatory sketches by Richard E. Bishop. In addition to the excellent photographs and drawings which are a study in bird flight in themselves, the authors explain in considerable but interesting detail the mechanics of flight and the practical usefulness of "Nature's most wondrous evolution—the wings of birds."

PRACTICAL EMULSIONS, (Second Edition, Completely Revised) by H. Bennett. Published by the Chemical Publishing Company, Inc., 26 Court Street, Brooklyn 2, N. Y. 556 pages. Price, $8.50.

Mr. Bennett's revised edition contains additional matter on partial fatty acid esters of polyhydric alcohols, as well as their application in bread, cake, ice cream, egg products and candy. Special sections have been added on the use of soap, lecithin and pectin as emulsifying agents, and on surface-active germicides.

A symposium on industrial emulsions has also been included. This covers the use of emulsions in leather treatment, dyeing and coloring, synthetic latex, polishes, cosmetics, and paints. The most recently developed emulsion formulae have been added to the formula section.

Schlich Medal Is Awarded H. H. Chapman

Herman Haupt Chapman, professor emeritus of forest management at Yale University, was awarded the Sir William Schlich Memorial Medal at the annual meeting of the Society of American Foresters in Boston on December 17.

Previously presented to only four individuals — Franklin D. Roosevelt,

H. H. Chapman

Gifford Pinchot, Henry S. Graves and William B. Greeley — the Schlich medal is for distinguished service in forestry. Presentation of the medal to Mr. Chapman was made by Clyde S. Martin, president of the society.

Two years after graduation from the Yale School of Forestry in 1904, Mr. Chapman joined its faculty and in 1911 attained to the Harriman Professorship of Forest Management. Except for brief periods when on leave to conduct responsible work for the U. S. Forest Service, his entire career was spent at Yale where he stamped the impress of his high professional ideals and keen powers of analysis on some fifteen college generations.

Elected a Fellow of the Society in 1922, he served as president of that organization from 1934 to 1937. He was also a director of The American Forestry Association from 1937 to 1939. In 1947 the degree Doctor of Science was conferred upon him by the University of Minnesota.

FAO Strives for Global Forestry Program

The not easy task of lifting one's sights to scan food and resource problems on a global scale was simplified for at least one observer at the recent Food and Agriculture Conference of the United Nations in Washington when a Des Moines, Iowa, feed dealer in the visitors' gallery said simply, "All this amounts to is being neighborly on a big scale."

Reduced to the simplest terms, that about sums it up. The very presence of 350 delegates from fifty-eight member nations in the main ballroom of Washington's Shoreham Hotel reflects a new attitude of governments and the public toward food, wood products, mineral resources and other raw materials. An awakened belief exists that there is plenty of everything for everybody if the world's resources are properly managed. And the prime purpose of these member nations is to marshall facts from which it is hoped will eventually evolve a pattern of plenty for all peoples.

The very bigness of this undertaking makes it unwieldy to define and analyze. It is a thing of many facets. But in the forestry and forest products division the principal problems were neatly packaged on December 13 at the Jefferson Memorial Auditorium of the Department of Agriculture by J. D. B. Harrison of Canada, Chief of FAO's forest economics section.

"What is forestry?" Harrison asked his audience. "In a word, it means the deliberate management of existing forests, and the establishment of new forests when necessary, to insure that the people shall receive in perpetuity the greatest possible benefit from all the forest lands at their disposal."

And if the thesis that the continued existence of any civilization depends upon its successful response to a series of challenges is valid, this means that foresters are very close to the main stream in this business of keeping civilization afloat, Mr. Harrison said. For the adoption of proper forestry measures, in time to prevent dangerous forest devastation with all its incumbent evils, constitutes just such a response. Failure to meet such challenges are illustrated with awful clarity, he said, in the valleys of the Jordan, Tigris and Euphrates rivers.

Present worldwide timber and wood products shortages were divided into three categories by the Canadian economist. Two of these are hopeful of improvement. The third is less hopeful. The first category, shortages in the United States and Canada, were termed relative rather than absolute and chiefly due to the extremely high current level of general economic activity.

The second category, shortages in Europe, will probably be overcome when war damage is repaired and the existing dislocation of normal trading channels corrected, Mr. Harrison said.

The third category, shortages of long standing such as are characteristic of the Middle East and large parts of Asia, are decidedly more grim in aspect. In these cases the situation is severe with but little prospect of early improvement. This is a case of millions of people having virtually no wood at their disposal.

In this connection it should be noted that Commission II of FAO endorsed plans for a forestry and timber conference for Asia, the Far East and the Pacific during 1949. At that time FAO's experts will take up what amounts to the toughest problem on the division's agenda.

Meanwhile, the first Latin American Conference held in Brazil last year is beginning to show encouraging results, FAO reports. A working group of the Forestry and Forest Products Division will proceed to Latin America in the near future to cooperate with governments in carrying out a series of constructive recommendations. A European commission created under the aegis of FAO also reports similar progress—especially on long term forestry problems. And further extension of on-the-ground work is contemplated in the Middle East and Africa.

The world is now suffering from shortages of forest products but the forests are inherently capable of producing far more wood annually than has ever been taken from them, Mr. Harrison said. If the future possibilities are to be realized, all productive forests must be brought into use and haphazard exploitation must give way to orderly management. Management of forests in each country must be undertaken by that country and great efforts will be required, he said. And finally, regional and world-wide cooperation between nations may provide the means for faster progress.—J. B. C.

Jeeps in the Wilderness

(*From page* 15)

cars across the diamond during a baseball game. They would properly recognize its allocation to another recreational use.

The jeep supplies a facility for use of outdoor areas that is legitimate. Jeep owners may properly be allowed to reach country beyond that of other motorized traffic. But to allow these little gas buggies, so admirable in many, many ways, to run wild through back country, merely because they are able to do so, brings infringement on rights and privileges of others.

Those forest highways established cooperatively by the Public Roads Administration, the state highway commissions and the U. S. Forest Service are open to all motorized traffic. Beyond these are access roads developed solely by the Forest Service for administration, fire protection and the utilization of forest products. For the most part, they are rough, steep motor trails unsuited for ordinary travel. But jeeps can negotiate them.

Here, then, is a possible solution: the belt beyond roads negotiable by passenger cars could very well be a "jeep zone." If, as seems the case, the reason jeep drivers try to go beyond ordinary automobile roads is to get into country that has attributes of wild land, the truck trails of the forest road system will take them into that type of country.

This zone would be their "playing field." But they should not be permitted to go romping over the countryside beyond these roads into the other fellow's territory.

Without planning, adjustment, regulations and direction, the jeep, command car and half-track, roaming through back country at will, can tear large holes in those wilderness values so treasured by an increasing number of people. Fitted in with other human uses of the outdoors, with full respect for consideration of others, this type of transportation can serve splendidly.

The answer to the jeep problem is well established and it is simple. It is merely the application of the principle of zoning to the human use of the outdoors.

Educators

(*From page* 25)

for a guide to teaching forestry. Another committee is working on plans for exhibits to be used at local fairs and expositions.

The results of this cooperative program are beginning to be felt. More and more money is set aside for forest education by the southern states. State funds appropriated for forestry have grown by leaps and bounds in nearly all of these states. The southern I & E chiefs firmly believe the success of their work has had a great deal to do with these increases.

Snow Hermitage

(*From page* 20)

never been able to go safely before, is worth twice that and more.

Heading our party were Arch Work, the Sno-Cat operator and head of the federal-state snow surveys, and Ranger Joe Kennedy from Grand Canyon National Park. They read the outdoors as a preacher reads his Bible—constantly, reverently, with never-ending wonder and abiding love. From these two veterans of the woods the rest of us learned priceless facts—"secrets" from those who will not court them.

Trees on the Canyon rim are of more than routine glory and strength; they have to be, to withstand winter hardships there. They seem somehow to share their strength with any creature that will dare to come for winter companionship with them. Great pines stand as patriarchs, and under them the saucy pinyons are urchins at play. Aspens are the innocent young teen-agers of the forest, cloaked sedately like the virgins they are in winter, but quaking with jittery, tittery eagerness in spring. Hovering around them, like chaperons, are spruce and fir and knotty old oaks, wise and honest and fiercely proud.

"A nation could live without courthouses," elderly J. B. Edwards remarked once, succintly, "but not without forests, not without trees."

He and Lea learned that the poets are right; there *is* a rhythmic whispering in the foliage which is meaningful, an "eloquence of beauty" even in the storms. You tune in on these subtleties not within an hour or a day, but with weeks of faithful trying.

"Up here I have learned to listen for the first time in my life," Lea told us. "I had never guessed how untrained we are as listeners, or how

much interesting sound goes unappreciated. Listening is a greater accomplishment than seeing, in many ways. It can be refined a little each day if you live close to nature."

The eloquence was enhanced for Lea and J. B. by the chatter of wild animal friends. We guests were privileged to observe some of this. Just after breakfast, Snowball came to the window sill for his daily handout. He is a Kaibab squirrel, of a species found on this Canyon rim and nowhere else in the world. He is almost as large as a cat, has tufted ears two inches high, and in winter his great fluffy tail is white so that he can squat on the snow and spread it over him in complete camouflage from enemies.

Other squirrels, along with flickers, woodpeckers, blue jays and such feathered clansmen, were happy to take left-over biscuits from J. B.'s hand. J. B., the elder hermit, could do more with the wild things than Lea could. I have observed this before, that children and elderly folk are trusted more by animals. Perhaps it is because we human beings in the middle brackets are lustier, stronger, with less need and appreciation for kindness.

Squirrels are smarter than most men. I climbed to one hole up a pine tree and found where a provident pair had stored more than a gallon of those biscuits against depression times. A friendly skunk came to the door of our cabin, too. This is not as appalling as the jokesmiths make it; skunks ask only a reasonable hospitality of man. All of us were experienced enough to grant this one precisely what he wanted—which was to sniff around a bit, take a bite of old turnip tossed to him, then amble away. He called regularly at that cabin and there was never a scent. Not even the nervous squirrels annoyed him.

Squirrel chatter and bird chirping at its height usually meant fair weather ahead, J. B. and Lea found. But if these creatures came in larger numbers and were quieter than usual, appeared very intent on eating and carrying food away for storage—look out! The sky would darken soon and a white fury would come streaking against the cabins.

Living and listening under such conditions is not entirely a matter of poetic beauty. You also get "nerves." A tap-tap-tapping haunted J. B. each night for a week. At two o'clock one morning he could stand it no longer, so he got up and dressed, took his six-shooter in hand and sallied forth to have it out with the ghost once and for all. He found it—a washtub swinging against a tree in the Canyon breeze.

Lea was walking along on snowshoes one night when *"Crack!"*—somebody nearby obviously shot at him with a rifle. His very blood chilled before reasoning reminded him that in sub-zero weather a log will freeze and sound off that way. One night in his cabin Arch Work was awakened by a pack rat in the rafters. He turned a flashlight upward and saw the rat peering around a box up there, then he got his gun and shot it, creasing the top edge of the box. Curiosity then made him open the box. It contained six sticks of dynamite and caps, left there by some transient miner months before. An inch lower and the bullet might well have blown Arch and the whole cabin into the Canyon.

Although they had few actual duties, Lea and his older companion were on a pay roll as watchmen. The Utah Parks Company, concessionaires from the Union Pacific Railroad for this rim resort, in summer operates the big hotel and cabin system there. Twice in winter fires have done great damage. Routine inspection every day keeps insurance rates down.

"Sometimes I go through the main ballroom on tiptoe," Lea told us. "If the moon is bright, reflections off the snow come in, moving because the trees and shrubbery sway in the rim winds. Suddenly these become people. Wealthy people, tourists, from New York and Chicago and Europe and everywhere. I stand there seeing them and hearing them laugh and talk, even though I know J. B. is the only other living soul closer than eleven miles. In daytime I come back here and stare out the huge plate-glass windows at the Canyon. Here, I am most alone; but I am never lonely."

In years past, a man and wife have

been selected to stand guard over those Canyon buildings while winter reigned. Theoretically it is ideal for a man to take his mate in there and live the life sublime. Actually she sulks, or gets appendicitis.

One who got sick was saved because the telephone line had not been blown down, and because three park rangers spent nearly a week fighting down trail from south rim thence up to north rim through ice and snow. They tied her on a stretcher, hacked toe holds down long cliffs of ice, let her down step by step with ropes for thousands of yards, and finally got her back across to a doctor. Since then the north rim hermitage has been exclusively for males.

Armchair adventurers are prone to let their imaginations flutter a little while contemplating an experience such as J. B. Edwards and Lea Master had. They have some pat answers about the effects of isolation. One man alone, they'll tell you, can woo the divine afflatus at a place like the Canyon rim, but two will come to hate each other and even shed each other's blood. They know; they have read about it in a book.

Mostly that's malarky, good only for plots of Saturday afternoon movies. Man is the most adaptable creature on earth. He achieves neither glory nor shame when isolated, he just fits into the new order of things, as J. B. and Lea did. If the place is extraordinarily inspirational—as the Canyon rim most certainly is—then environmental influences will be stronger, for good. Ranger Joe Kennedy summed it up for us.

"If you are self centered," said he, "you will become more so. If you are one who loves people, you really suffer from loneliness. But most of us are just average folk, with common sense; if forced to stay alone for long periods, we settle down and make the best of it. My feeling is that Lea and J. B. are broader men for having lived a winter beside a great scenic wonder. It is bound to have done something to their souls."

No More Pulp Waste

(*From page* 17)

cent, when it can be burned under a boiler, as in an oil burner. Liquor introduced into the boiler furnace consists of water, lignin and carbohydrates from the wood and magnesium sulphur compounds from the cooking liquor. Combustion causes lignin and the carbohydrates to produce heat. The other chemicals are transformed into magnesium oxide and sulphur, which passes off in combustion gases as sulphur dioxide.

If waste liquor is efficiently evaporated and burned, steam is generated in sufficient quantities to furnish all or part of the steam and power required for the process. Sulphite recovery furnaces are conveniently located in the same building with the kraft recovery furnace and common power generating equipment is used. Thus one power plant serves both the sulphite and kraft mills.

Magnesium oxide dust collected from furnace gases is mixed with water and pumped through absorption towers. Combustion gases containing the sulphur dioxide are piped to the same absorption towers where they come in contact with the magnesium oxide slurry. Cooking acid is formed by the chemical combination produced, completing the cycle.

Because some small losses occur in the process, small amounts of fresh magnesium oxide and sulphur dioxide are added to the cooking acid to maintain the production rate required. These additions of costly magnesium oxide are still economically feasible.

To produce 285 tons of sulphite pulp a day, the same quantity of waste liquor solids must be handled, many gallons of water evaporated and solids burned. This requires vast expenditures in buildings and equipment. The production of steam and power through burning of waste liquor is of paramount importance to the Northwest.

Sawmill wood waste, partially utilized in the past as hog fuel to produce steam and power for the previous calcium base sulphite mill, may now be used instead as raw material for the new sulphate pulp mill which uses Douglasfir wood. The magnesium oxide sulphite process thus not only eliminates stream pollution completely but is a major step toward more complete and efficient utilization of timber resources in the Pacific Northwest. Energy in what was previously a waste item is now converted into steam and electric power.

It is expected that pulp of a higher quality than calcium base pulp will be produced with the magnesia base process because greater solubility of magnesium compounds will facilitate pulp washing operations and result in less impurities in finished pulp.

Skiing for Everybody

(*From page* 38)

winter centers — Olympic, Mt. Rainier, Yosemite, Crater Lake, Sequoia-Kings Canyon, Lassen and Rocky Mountain national parks.

While the Forest Service exercises tight supervisory control in its 236 national forest areas, it doesn't try to do it all. Private enterprise is permitted to construct and operate suitable improvements compatible with Forest Service policy. At the moment there is much interest in a possible winter sports center in the Mineral King area of California, said by many to be potentially one of the finest skiing areas in the world. And while the Service has made no commitments, it sees no objection to such development by the proper applicants.

So it's a big job and rapidly getting bigger. More capital is needed to open up new resorts, provide new facilities. More funds are needed to provide supervisory personnel to look after things when the new areas are operating. And areas already in use should have lots of improvement.

The foresters and park men do not expect their winter crowds to slack off—quite the contrary. Picket fences of skis stacked outside college dormitories, more and more cars with ski racks on top, railroad stations packed every winter weekend with flannel-shirted sportsmen all provide clues that point to the gigantic proportions the sport has assumed.

And just to cap it off here are a few statistics. The snow slopes last winter drew 316 thousand visitors to Oregon's Mt. Hood area; 285 thousand to the Big Pines section on California's Angeles National Forest; 200 thousand to Donner Summit in the Tahoe National Forest of California; 150 thousand to Snow Valley in California's San Bernardino National Forest; 104 thousand to Winter Park and Berthoud Pass in Colorado's Arapaho National Forest; 154 thousand to the Alta and Brighton slopes in Utah's Wasatch National Forest; 104 thousand to Yosemite National Park in California and eighty-six thousand to Mt. Rainier National Park in Oregon; seventy thousand to Utah's Snow Basin in Cache National Forest; thirty-one thousand to the Arizona Snow Bowl in Coconino National Forest; seventy-two thousand to Snoqualmie Pass in Washington's Snoqualmie National Forest; seventy-two thousand to Mount Baker's Heather Meadows in Washington; eighty-nine thousand to White Mountain National Forest in New Hampshire and sixty-one thousand to Vermont's Green Mountain National Forest.

Yes, it looks as if frozen fun is here to stay.

Forests of New Mexico

(*From page* 27)

serves of one kind and another. Nearly sixteen million acres, however, are chiefly valuable for purposes other than timber production; in this category are pinyon-juniper, mesquite and desert groves, valuable for limited yields of nuts, roots, firewood and other products known to the Indians, and even more valuable from the public standpoint as watershed cover.

Commercial forest land is largely in federal ownership — 2,020,000 acres in national forests and 385,000 acres in other holdings. State areas, mostly the more densely forested grant lands, amount to 149,000 acres. Nearly 1,000,000 acres of private forest are to be found in New Mexico—693,000 acres in farm and ranch holdings (much of it upon old Spanish grants to individuals) and no less than 218,000 acres owned by industrial concerns. Together with national forest and state-owned timber, this last mentioned woodland forms the basis of a considerable lumber producing business.

Sawtimber is present upon industrial lands to the extent of 587,000,000 board feet, and upon farm and ranch woodlands it amounts to 1,072,000,000 board feet. The state still has 407,000,000 board feet left upon its holdings. On the national forests Uncle Sam has 5,610,000,000 board feet, and on other lands 795,000,000 board feet. All this adds up to 8,471,000,000 feet.

The Commissioner of Public Lands is authority for a statement issued some time ago and given wide publicity, which indicates the variety and extent of federal land ownership and administration in New Mexico. Largest block naturally is found under the Grazing Division, Bureau of Land Management, Department of the Interior, a matter of 15,237,138 acres, while the national forests are next in

order of importance, adding up to 8,882,389 acres. Indians, who actually are private owners, although their lands are managed by a federal agency (Indian Service), hold 6,488,618 acres. The War Department has 1,681,879 acres and the Soil Conservation Service 650,012, and the General Land Office 549,000 acres.

Among other arms of the federal government functioning in the state are the Fish and Wildlife Service, National Park Service, Bureau of Reclamation, Farm Security Administration, Federal Works Agency, Department of Commerce and the International Boundary Commission. The Veterans Administration, R.F.C. Mortgage Company, Metals Reserve Company, Defense Plant Corporation and Reconstruction Finance Corporation, National Housing Agency and the Bureau of Mines complete the list, which accounts for 34,005,911 acres.

"He's trying to figure out which way it'll fall"

By various legislative acts the Congress of the United States has granted to New Mexico approximately 12,801,782 acres of public lands for the benefit of certain state institutions and for other specific purposes. As of June 30, 1945, the State Land Office had disposed of 707,571 acres by sale and had 717,714 additional acres under sale contract. Yet state policy appears to be one of retaining such lands and managing them for income. More than 11,000,000 acres are leased for agricultural or grazing use, while other leases for production of oil and gas, minerals and various other values, including timber, account for earnings which accrue to schools and other institutions.

It is quite apparent that the people of New Mexico believe their administration of state lands is in the best interest of themselves and posterity. More than that, through their senators and representatives they have asked the Congress to grant to the state ten million more acres of public land.

In view of the long-standing difference of opinion regarding the wisdom of placing public range lands in private or even in state ownership, it is doubtful that the proposed legislation will enjoy the easy sailing predicted for it by some New Mexicans.

Obviously, public administration sounds the keynote of land use, and since much of the state's area is open range, uses other than tree growing enjoy priority in the minds of most local people. Yet there is no escaping the fact that woodlands, whether scattering non-commercial areas or the dense stands of high mountain slopes, have important values and possibilities in the public good.

The Forest Resource Appraisal of the American Forestry Association, carried on in New Mexico in cooperation with the U. S. Forest Service and Soil Conservation Service, noted that current growth in all forests suitable for commercial use is greater than total drain from all causes, although both sides of the equation are pitifully low. It was estimated that annual sawtimber increments of twenty to forty board feet upon private lands and forty to sixty board feet in national forests are sufficient to overbalance losses from fire, insects, disease and commercial cutting. Yet there is expressed the warning that all natural causes of loss are higher than is necessary, given intensive management.

In terms of cubic measure, this total drain is calculated as 24,658,000 cubic feet, ninety percent due to to commercial cutting, while fire accounts for 395,000 cubic feet. Strangely enough, windthrow is estimated to take 1,562,000 cubic feet, while insects and disease take the remainder. Commercial cutting adds up to 123,338,000 feet board measure of sawtimber, and negligible volume of smaller stuff. All timber used or destroyed is softwood, as hardwoods are too minor to be figured in these extensive estimates.

While most timber sold and used came from national forests, it is interesting to note that in 1945, the Commissioner of Public Lands reported that there were seventeen operating contracts in effect upon state woodlands. Timber sales brought in nearly $20,000 during the first six months of 1945, while three timber sales made during the year showed a total gross estimated footage of 13,000,000 board feet.

Industrial timber operations are

important in their own right, although for the most part they are carried on by concerns which add large purchases from public sources to their regular stumpage supplies. With this fact in mind, it is interesting to note that in 1939 the New Mexico legislature enacted a law regulating the cutting of timber.

Modeled after the forest practice rules adopted by the Western Pine Association, this law, among other things, required any person, firm, association or corporation cutting sawtimber species in the state to (1) take all reasonable precaution to prevent starting fires and to fight all that did start; (2) take all reasonable precaution in falling trees and moving logs to protect the young trees left, and to reserve sufficient uncut trees of seed-bearing size on the lands being cutover.

Inadequate though such a law might be in a region of slow growth and severe weather conditions, it was a step in the right direction, showing a healthy preoccupation with problems of timber supply by the private owners. The state, having no duly organized forestry agency other than the land commissioner, could still claim that beginnings had been made in development of technically advanced management of state woodlands. In this, both the industry association and the federal Forest Service have been persistently helpful.

Black Rock Forest

(*From page* 13)

The problems in the actual restoration of the forest have involved development of the best stands possible and finding means of marketing the small-sized and low-quality products resulting. The management practices are based on the handling of mixed stands. Removal of the poorly formed trees and those of less valuable species is accomplished in the sapling stands by weedings—using the ax instead of the hoe. Later in the life of the stands, improvement cuttings are used to speed up the approach to the types best suited to the sites and able to produce the most valuable products. In developing new stands, planting has been found unnecessary since plenty of good hardwood reproduction comes in naturally.

In connection with the silvicultural operations of the Black Rock Forest, several improved methods of handling wood have been developed. A portable, metal chute for sliding cordwood down steep slopes, a high-duty wood saw and a portable metal charcoal kiln are among these. The forest pioneered this development in America.

Now in its twenty-first year of operation, the Black Rock Forest has literally come of age. The conclusions reached as a result of its research are not the kind that reach headlines nor has a Paul de Kruif appeared to dramatize them before a casual and hasty public. Yet they are the stuff of which forest research is made. Tree generations do not hurry and there is no substitute for the slow, honest path of true science and workaday silviculture. The problems that the Black Rock Forest was set up to solve were largely forced upon man by his own carelessness. They are urgent problems but not of the kind that can be settled by furrowed eyebrows and a set of theories as to what is desirable topped off with a neat aphorism and a Q.E.D.

A progress report covering the first twenty years of operation will soon appear. In it will be recorded the hopes, the problems and the achievements of another decade. Forest research, like human history and needs, is both unending and accumulative. That is why each year gives more value to the Black Rock Forest as a research center and as a source of pride to Americans who believe in the continued vitality of private endowment.

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OREN ARNOLD (*Snow Hermitage*), nationally known for his stories of the Southwest, lives at Phoenix, Arizona. ALBERT ARNST (*No More Pulp Waste*) is a forester with the Weyerhaeuser Timber Company. ARTHUR H. CARHART (*Jeeps in the Wilderness*), western writer and conservationist, headquarters in Denver. N. W. HOSLEY (*Black Rock Forest*) recently moved to Washington, D. C., to take charge of wildlife investigations on public lands for the U. S. Fish and Wildlife Service. J. H. KITCHENS, JR. (*Educating the Educators*) is assistant forester, in charge of public relations, for the Louisiana Forestry Commission. HELEN HAZELTON SMITH (*An Irish Forest*) is a California writer. JOHN B. WOODS (*Forests of New Mexico*) directed The American Forestry Association's Forest Resource Appraisal.

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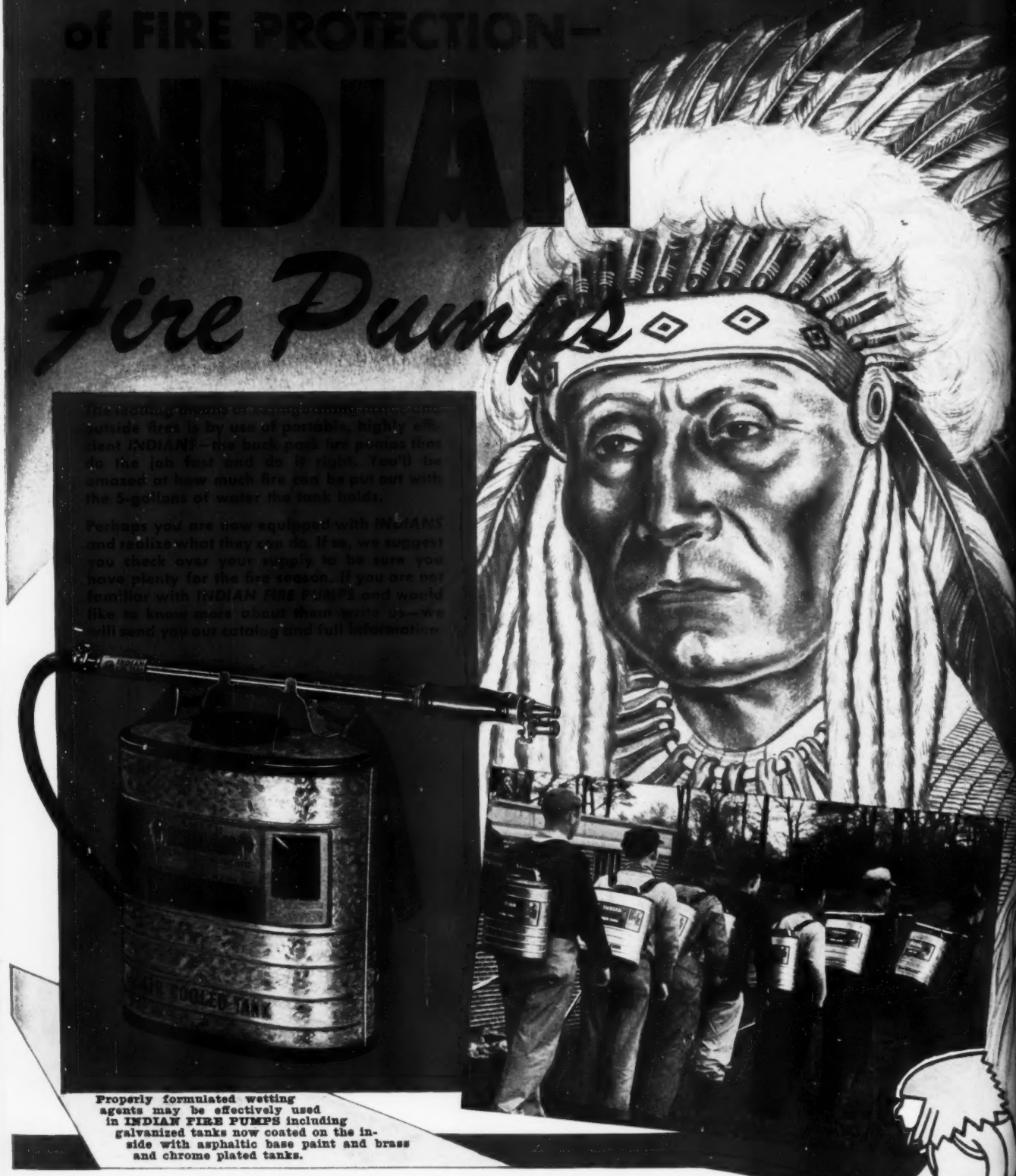

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